BITS Pilani

Pilani | Dubai | Goa | Hyderabad

Bulletin

2021-22

COMPLETING

57

Years

in the service
of the nation

innovate achieve lead

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE PILANI (RAJASTHAN)

MEMBERS OF THE BOARD OF GOVERNORS

Dr. Kumar Mangalam Birla, Chancellor

Smt. Shobhana Bhartia, Pro-Chancellor

Prof. Ranendra Narayan Saha, Acting Vice-Chancellor

Shri Sidharth Birla

Smt. Manjushree Khaitan

Shri Akshay Poddar

Shri Rakesh Ranjan

Dr. Vineet Joshi

Prof. Sudhirkumar Barai

Shri D. Bhattacharya

Shri Hemant Kumar

Prof. Bijay Kumar Rout,
Acting Registrar, Non-member Secretary

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE
PILANI (RAJASTHAN)

GOVERNANCE AND MANAGEMENT

Dr. Kumar Mangalam Birla
Chancellor

Smt. Shobhana Bhartia
Pro-Chancellor

Prof. Ranendra Narayan Saha
Acting Vice-Chancellor

OTHER SENIOR OFFICERS OF THE INSTITUTE

DIRECTORS

Prof. Sudhirkumar Barai, Pilani Campus &
Director-in-Charge, International Programmes and Collaborations

Prof. G. Sundar, Hyderabad Campus & Off-Campus Programmes and Industry Engagement

Prof. G. Raghurama
K.K. Birla Goa Campus

Prof. Srinivasan M P
Dubai Campus

ACTING REGISTRAR

Prof. Bijay Kumar Rout

DEANS

Prof. Arya Kumar
Alumni Relations

Prof. Sunil Bhand
Sponsored Research and Consultancy

Prof. Ajit Pratap Singh
Academic–Undergraduate Studies

Prof. M B Srinivas
Academic-Graduate Studies & Research

Prof. S. Gurunarayanan
Work Integrated Learning Programmes

Prof. Souri Banerjee
Faculty Affairs

Prof. Srinivasa Prakash Regalla
Practice School

Chief Finance Officer (On Deputation)

Mr. Arun Khetan

Postal Address:

BITS Pilani – 333 031
Rajasthan, India

FAX No. : 91-1596-244183

BITS Home Page: http://www.bits-pilani.ac.in

INSTITUTE EMBLEM

The Emblem of the Institute represents a synthesis of Science, Humanities and Engineering with Lotus representing Humanities & Social Sciences, the Structure of Molecule representing Science, and the Figure of Rocket representing Engineering & Technology.

The Motto is –

'Knowledge is power supreme'

BITS VISION

“What do we propose to do here? We want to teach real science whether it is engineering, chemistry, humanities, physics or any other branch. We want to develop a scientific approach in Pilani, which means there would be no dogma. There will be a search for truth. What we propose to do here is to cultivate a scientific mind.”

— The Late Shri G.D. Birla
Founder Chairman, BITS, Pilani

“ … to prepare young men and women to act as leaders for the promotion of the economic and industrial development of the country and to play a creative role in service to humanity.”

— The Late Dr. K.K. Birla
Former Chancellor, BITS, Pilani

“What is it that can empower our nation? The most obvious answer is education. Education that enhances livelihoods but also education that is value-based. Education that gives roots and gives wings as well”.

—Dr. Kumar Mangalam Birla
Chancellor, BITS, Pilani

TABLE OF CONTENTS

PART I : GENERAL INFORMATION

History and Purpose I-1

BITS Pilani - Accreditations and Ranking I-2

BITS Pilani – Strategic Improvement Journey..... I-2

Campuses of BITS I-4

International Students Association I-5

International Student Admission in Integrated First Degree Programmes I-5

Facilities at Campuses I-5

Student Life at BITS I-6

Student Services I-8

Medical Cetre I-9

Placement and Campus Interviews I-10

Alumni Relations Division I-13

Human Resource Section I-14

Central Facilities I-14

Centers of Research and Development I-20

Specialized Laboratories I-26

Dubai Campus and its Facilities I-32-43

K K Birla Goa Campus and its Facilities I-44-54

Hyderabad Campus and its Facilities I-55-70

Membership of Distinguished Bodies I-71

Collaboration with Foreign Educational Institutions I-71

PART II: EDUCATIONAL PROCESS AND PROGRAMMES OF STUDIES

Educational Process II-1

Programmes of Studies II-1

Integrated First Degree Programmes II-2

Three Tier Structure of Education II-3

Higher Degree Programmes II-5

Special features on Admissions to any M.E. Programme II-7

Master of Business Administration II-7

Doctoral Programmes II-8

Programmes Offered at BITS, Pilani – Pilani Campus II-8

Programmes Offered at BITS, Pilani – K.K. Birla Goa Campus II-9

Programmes Offered at BITS, Pilani – Hyderabad Campus II-9

Programmes Offered at BITS, Pilani – Dubai Campus II-10

Teaching-Learning Process II-10
Evaluation II-10
Flexibilities II-12
Admissions in both Semesters II-12
Admission with Marginal Deficiency II-12
Admission with Advanced Standing II-12
Dual Degree Scheme II-13
Transfer II-13
Audit II-13
Other Flexibilities II-14
Academic Regulations II-14
University-Industry Linkage II-14
Practice School II-14
Research at BITS II-26
First Degree II-27
Higher Degree II-27
Ph.D. Degree II-27
Areas of Research II-30

PART III: ADMISSION MODALITY

Admission modality III-1
Integrated First Degree Programmes III-1
Eligibility for admission III-1
The mechanism of admission procedure through BITSAT III-1
Admissions at Pilani campus, K. K. Birla Goa Campus and Hyderabad Campus III-3
Dual Degree for students of M.Sc. (Biology, Chemistry, Economics, Mathematics and Physics) Programmes III-4
Direct Admission to Board Toppers III-4
International students through 'International Student Admission (ISA) Scheme' III-5
Preparation of Merit List for Admission (ISA) III-6
Advance fees, Refund and Forfeiture of fees III-6
For the candidates on waiting list III-6
Scholarship policy for International students admitted through ISA Scheme III-7
Higher Degree (PG) Programmes III-7
Ph.D. Programme III-7
Off-Campus Ph.D. Under Ph.D. Aspirant Scheme III-8
Foreign Students or Indian Students Having Qualifications from Foreign Countries III-8
Graduates of BITS III-8

Admission with marginal deficiency III-8
Casual Students III-8
Information for Candidates III-9
Application Procedure III-9
Integrated First degree Programmes III-9
Higher Degree MBA and Ph.D. Programmes III-9
Some Important Instructions III-9
Enclosures with Application III-10
Selection for Admission III-10
Advance fees, Refund and Forfeiture of fees III-10
Instruction for Payment III-11
Schedule of Fees, Pilani Campus III-12
Schedule of Fees, K K Birla Goa Campus III-13
Schedule of Fees, Hyderabad Campus III-14
International Student Admission Scheme, BITS, Pilani , Pilani, Goa and Hyderabad campuse III-16
Scholarships III-19
Student Record III-20
Programme Codes III-20
Rules and Regulations III-21
Anti-Ragging III-21
Information for Candidates Applying for Bits Pilani - Dubai Campus III-21
Higher Degree Programmes III-22
Doctoral Programme (Ph.D.) III-22
Flexibilities for First Degree Programmes at Dubai Campus III-23

PART IV: DETAILS OF PROGRAMMES

Integrated First Degree Programmes **IV-1**
Structure of the Integrated First Degree B.E. Programmes..... IV-1
The category-wise structure of each program..... ..... IV-1
Dual Degree Programs..... .... IV-2
Semester-wise Pattern for students admitted to First Degree Programme..... .... IV-3-11
Semester-wise Pattern for Students Admitted to B. Pharm. Programme IV-4-13
Semester-wise Pattern for Students Admitted to M.Sc. Programmes IV-14-20
Pattern 1 Semester-wise Pattern for Composite Dual Degree Programmes IV-21
Pattern 2 Semester-wise Pattern for Composite Dual Degree Programmes..... IV-22
Pattern 3 Semester-wise Pattern for Dual Degree (Duration 11 Sem.) IV-23
Semester-wise pattern for composite Dual Degree Programmes (M.Sc. with B.E Programmes) IV-24-63
List of Courses for B.E. / M.Sc. / B.Pharm. Programmes..... IV-64-75
Pool of Humanities Courses for students admitted in 2011 onwards n first degree prorammes IV-75-78

Minor Programmes for First Degree Students..... IV-78-79
Minor Courses IV-80-89
Higher Degree Programmes..... IV-90-114
Ph.D. Programme IV-115-116

PART V: WORK-INTEGRATED LEARNING PROGRAMMES

Introduction..... V-1
Salient Features of WILP..... V-1
Table: Currently Operative Work-Integrated-Learning Programmes at a Glance..... V-4
Admission Modality..... V-7
Fees Structure..... V-7
Educational Process..... V-7
Evaluation Methodology..... V-9
B. Tech. Programmes. Programmes V-13-24
Master of Science (M.Sc.) programmes..... V-25-29
B.Sc. Programmes for Trainees / Working Professionals..... V-30-39
Four-semester M.Tech. programmes..... V-40
Eight-semester Integrated M.Tech. programme..... V-41
M. Tech. (Automotive Electronics)..... V-42
M. Tech. Automotive Engineering..... V-43
M. Tech. (Computing Systems & Infrastructure)..... V-45
Integrated M. Tech. (Computing Systems & Infrastructure)..... V-47
M.Tech. Data Science & Engineering V-49
M. Tech. Design Engineering..... V-52
M.Tech. (Digital Manufacturing)..... V-54
M.Tech. Embedded Systems..... V-56
M.Tech. Environmental Engineering..... V-58
M.Tech. Manufacturing Management..... V-59
M.Tech. Microelectronics..... V-61
Integrated M.Tech. Microelectronics..... V-63
M.Tech. Pharmaceutical Operations and Management..... V-66
M.Tech. in Quality Management..... V-68
M.Tech. Software Engineering (4-semester)..... V-72
Integrated M.Tech. Software Engineering..... V-74
M.Tech. Software Systems (4-semester) with specializations..... V-77
M.Tech. Systems Engineering..... V-85
MBA programmes..... V-87-101
Post Graduate Diploma V-102-113

PART VI: COURSE DESCRIPTIONS *(On-Campus)* *See enclosed CD for Contents*

Analysis & Application Oriented Courses VI-1-96

PART VII: COURSE DESCRIPTIONS *(Off-Campus)* *See enclosed CD for Contents*

Course descriptions for Off-Campus Work-Integrated Learning & Collaborative Programmes ..... VII-1 to VII-76

PART VIII: ADMINISTRATIVE STRUCTURE

Administrative Structure VIII-3

Discipline-wise List of Faculty VIII-12

Scientists/Professionals participating in Specific Collaborative Programmes (WILPD) VIII-34

Members of General Body VIII-40

Senate VIII-41

Research Board VIII-47

Academic Counselling Board VIII-48

Academic Monitoring Board VIII-49

Standing Committee for Students' Discipline VIII-49

Library Committee VIII-50

Academic Governing Committee VIII-52

Doctoral Counselling Committee VIII-53

Admission Committee VIII-53

HIGHLIGHTS

- Multi-campus University with campuses at Dubai, Goa and Hyderabad
- Admission in both semesters
- Admission only on merit through a unique computer based on-line admission test, BITSAT
- 20 – 30 Board toppers join every year
- Scholarship to 30% of students
- Academic flexibilities-Dual Degree-a unique combination of Science and Engineering education
- Modular and flexible academic structure
- Vertical transfer options from First Degree to Higher Degree/ Ph.D.
- Continuous, internal, transparent evaluation system
- Practice School – strong linkages with industries
- Work-Integrated Learning Programmes for employed professionals
- State-of-the-art institutional library with over 2 lac books
- State-of-the-art Campus-wide computer network
- Large number of Alumni in top positions in India and abroad
- Very strong Alumni network
- Collaboration with foreign universities of repute
- Entrepreneurial Leadership Development
- Many societal development projects-Rain Water Harvesting, Desert Development Technologies, Women Empowerment, Healthcare
- Major cultural, academic and sports events-OASIS, APOGEE and BOSM - organized by students
- Privately funded with an affordable fee structure

PART I

GENERAL INFORMATION

HISTORY AND PURPOSE

The Birla Institute of Technology and Science (BITS), Pilani is an all-India Institution declared as deemed to be university established under Section 3 of the UGC act. It is privately supported, fully residential and admits both male and female students. The primary objectives of the Institute are "to provide for and otherwise promote education and research in the fields of Technology, Science, Humanities, Industry, Business, Public Administration and to collate and disseminate in such fields effective ideas, methods, techniques and information as are likely to promote the material and industrial welfare of India" and to "train young men and women able and eager to create and put into action such ideas, methods, techniques and information".

The Institute was initially registered as a Society under the Rajasthan Societies Registration Act of 1958 on the 13th May, 1964. Subsequently, by notification published in the Gazette of India dated the 27th June, 1964, the Ministry of Education, Government of India, declared that the Institute being an institution for higher education shall be "deemed to be a University". The Institute started functioning with effect from 1st July, 1964 with late Shri G.D. Birla as its Founder Chairman.

The Institute started as a small "Pathshala" in Pilani way back in the year 1901 by Seth Shiv Narainji Birla with one teacher for educating his grandsons, late Shri G.D. Birla and late Shri R.D. Birla. Pilani was then a small isolated desert village in Rajasthan. The Pathshala evolved slowly and steadily into a High School in 1925 and became an Intermediate College in 1929. The Birla Education Trust was founded in the same year.

The Intermediate College developed into a Degree College in 1943. In 1947, this college was raised to postgraduate level. In 1950, Pharmacy courses were started in this college, and in 1952, it was bifurcated into College of Arts and the College of Science, Commerce and Pharmacy.

During World War II, the Government of India established a Technical Training Centre at Pilani for the supply of technicians for Defence Services and industry. In 1946, late Shri G.D. Birla decided to convert it into an engineering college with degree programmes in Electrical and Mechanical Engineering. Master's programme in Electronics was started in 1955. B.E. programmes in Civil Engineering and Chemical Engineering were started later. In 1964 with the inception of the Birla Institute of Technology and Science, the colleges, viz., Birla College of Science, Commerce and Pharmacy, Birla College of Arts and Birla College of Engineering situated at Pilani, as also all properties, movable and immovable, together with educational facilities, hostels, staff quarters, playgrounds, etc., became part of the Institute and all these properties were vested in it. During the early years of its inception, i.e., 1964 to 1970, the Institute with the support of Ford Foundation Grant had the advantage of having collaboration with Massachusetts Institute of Technology (MIT), USA. It adopted the semester system, modular structure of courses, continuous and internal evaluation, letter grading, etc. It also created institutionalized linkages with the industries. Over a period of time, the Institute also introduced several flexibilities in its educational programmes.

Dr. K.K. Birla who took over as the Chairman of BITS in 1983 was deeply involved and closely associated with his visionary father in running both the earlier Birla Colleges and the current institute BITS, since its inception. With his spirited involvement in all the activities of the Institute, he was able to see the vision of his father Late Shri G.D. Birla unfolding. Taking over the responsibility of running the institute, Dr. K.K Birla who became the Chancellor in 2003 realized the need for greater number of promising graduates in the field of science and

technology in shaping up the nation's development. Hence he initiated an increase in the number of students at Pilani campus during 1999 which gradually carried the total strength from 2500 to 4000. Under his patronage, BITS started expanding by establishing three campuses, first in Dubai in the year 2000,second in Goa in the year 2004 and third in Hyderabad in the year 2008.

Consequent upon the sad demise of Dr. K.K. Birla on 30 August 2008, Dr. Kumar Mangalam Birla was elected as the Chancellor and Smt. Shobhana Bhartia was appointed as the Pro-Chancellor of the Institute. Under the leadership of young and dynamic Chancellor, BITS is taking steps to scale greater heights.

BITS Pilani – Accreditations and Ranks.

BITS Pilani strives hard to attain greater heights in education, research and outreach. BITS Pilani participates in as many ranking and accreditation process as possible.

International: BITS Pilani is now ranked in the Global University ranking of both THE (Times Higher Education) and QS (Quacquarelli Symonds) (Which are the most internationally eminent Rankings published. The ranking in 2018 are as follows: THE Global ranking range 801-1000; THE Asia ranking range 201-250. The QS Global ranking range 801-1000; The QS Asia ranking 187; The QS BRICS ranking 109.

NAAC: In the year 2000, BITS was accredited in its first cycle, by NAAC with the highest possible rank in University accreditation. In 2008-2009, the NAAC peer team visited BITS campuses at Pilani, Goa and Dubai and BITS Pilani, has been reaccredited in its second cycle with CGPA 3.71 on four point scale at the highest 'A' grade. Again in 2016, the NAAC peer team visited BITS campuses at Pilani, Goa and Hyderabad and BITS Pilani has been reaccredited in its third cycle with a CGPA 3.45 with 'A' grade.

NIRF: National Institutional Ranking Framework (NIRF) has ranked BITS Pilani at 9, 13, 17, 23 in years 2016, 2017, 2018 and 2019 respectively, in University Category based on the data of all four campuses. Specifically in 2019 our ranking in overall category is 39, in engineering 25 and in pharmacy 5.

University Categorization: In order to grant autonomy to better performing institutions, UGC has notified UGC [Categorization of Universities (only) for Grant of Graded Autonomy] Regulations 2018 on 12th February 2018, in the Gazette of India. Based on our proposal the UGC in its 532nd meeting held on 24.5.2018, decided to grade BITS Pilani, as Category II Deemed to be University.

Institution of Eminence: BITS Pilani has been identified as one of the six institutes (three publicly funded and three privately funded) of eminence by MHRD on July 10, 2018.

Others: Among all the technical institutions of India, in 2018 BITS Pilani is ranked 1st among the private engineering colleges by India Today, 1st among the private and deemed technical universities by The Week and 5th by the Outlook magazines in their recent surveys, and it is good to note that BITS Pilani, is the highest ranked non-government institute consistently in some of these surveys.

BITS Pilani-Strategic Improvement Journey

In the last 12 years, BITS has taken giant strides to cement its legacy of being an excellent teaching institution, with focus on research. Besides, the institution has substantially expanded its capacity to provide education to more meritorious students from India and abroad. This has been realized through a well-planned transformation program that not only ushered major improvements in academics and research, but also in the infrastructure space with modernization and new construction of several academic blocks, faculty and student housing and other facilities at Pilani, Goa and Hyderabad campuses. An

elaborate growth plan, with student and faculty intake over the next 12 years, formed the core of this transformation.

The beginning of this strategic transformation was with the launch of Vision 2020 in the year 2009, with an aim to improve BITS Pilani's ranking amongst science & technology institutions in India and Asia. The improvement in the rankings was planned through 3-year programs, known as "Mission" programs, with a clear objective of bringing significant transformation in chosen focus areas, known as thrust areas. First such program was called Mission 2012, that saw over 100 faculty member working with BITS leadership in 6 thrust areas. The major achievements of the Mission 2012 program were - a renewed focus on research with schemes such as Seed Grant, Research Initiation Grant etc., improved administration through automation, introduction of new people policies in recruitment and performance management, bringing a distinct brand identity guidelines and the most significant of all – Project "Parivartan".

In November 2011, Chancellor Dr. Kumar Mangalam Birla formally announced the Project "Parivartan" to modernize and expand physical infrastructure in Pilani, which was subsequently extended to Goa and Hyderabad campuses as well. Through this project a number of new facilities have been created and the existing academic blocks, hostels and faculty & staff housing have been renovated and augmented. The project will take a few more years to complete.

After Mission 2012, a follow-up program called Mission 2015 was initiated with focus on seven new thrust areas. Mission 2015 brought further transformation such as international student admission, institution-wide innovation and incubation centres and policies, inter-disciplinary centres-of-excellence for research and application, Teaching Learning Centres for research on new age teaching and pedagogy amongst other vital policies and programs. After two major transformation Missions, the leadership decided to consolidate and review the progress made thus far in the journey towards Vision 2020 and introduced periodic campus and institution reviews. These reviews are now completely institutionalized and are an excellent platform for departments and divisions across BITS to showcase their achievements, and an opportunity to align their objectives and activities with that of the institution. Equipped with several successes and deep learning of implementation of the two strategic programs, followed by periodic institutional reviews, BITS began deliberations for an extended vision, that would prepare the institution well beyond 2020.

In 2017, BITS engaged a leading global strategy consultant for formulating an overall roadmap that would propel it to further heights and help attain leadership position in the coming years. This strategic exercise, christened as *Project Lakshya* is now in implementation phase, with focus on five thrust areas: Research, Faculty, Programs & Pedagogy, Industry Engagement and Alumni Relations. The thrust areas, each led by a senior leader, have set themselves goals that would strengthen and enhance BITS' position amongst global science and technology institutions.

BITS Pilani has always been a leader in providing excellent education – the eminent alumni and stellar faculty who have been part of this institution for the last 57 years are a testimony to this fact. In 2018, Ministry of Human Resources and Development, Government of India, identified BITS Pilani for the *Institution of Eminence* status, concurring and endorsing the faith our student, faculty and alumni have reposed since its inception. BITS Pilani now admits approximately 3400 first degree students, 832 higher degree students and 378 PhD scholars. With a strength of around 875 faculty members and over 1170 staff members across its 4 campuses, BITS is

committed to achieve faculty-to-student ratio that meet global standards. BITS is also proud to have a network of over 65000 alumni spread across the world. “BITSians” are leaders in whichever field they have made their careers: Industry, Entrepreneurship, Academia, Research, Social Sector, Armed Forces, Entertainment, and the Government to name a few.

BITS Pilani has been ranked 15th in the University category of NIRF 2020. Ranked in QS World subject ranking 2021 with 7 departments in top 500 and Pharmacy department in top 200, 4th from India. Nature Index India has ranked BITS as the 9th in India in Physical Sciences. In the constant quest to scale newer heights and set new standards, BITS expects an active role and participation from all its key stakeholders – student, faculty, staff, and alumni.

CAMPUSES OF BITS

BITS Pilani - Pilani Campus

BITS Pilani, Pilani Campus is located in the Vidya Vihar campus adjacent to Pilani town in Jhunjhunu district, in Rajasthan. Pilani is the home town of the Birla family and has a population of about 50,000. It is about 200 km west of Delhi and about 220 km north of Jaipur. The temperatures during the year go to extremes like 45°C in summer and 0°C in winter. The climate is generally dry and healthy. Annual rainfall is about 30 cms.

The Institute buildings, hostels and residential quarters for staff with neatly laid out roads, lawns and gardens constitute the BITS Campus of about 240 acres.

Pilani can be reached either by rail or by road. The nearest railway stations are Chirawa on W.R. (16 km) and Loharu on N.R. (24 km). There are connecting buses to Pilani from Loharu and Chirawa railway stations. There are regular bus services between Delhi-Pilani and Jaipur-Pilani. The buses leave Delhi from Inter-State Bus Terminal, Kashmere Gate and Jaipur from Rajasthan State Roadways bus stand, Sindhi Camp. The Pilani campus is very close to the Pilani bus stand.

BITS Pilani, Dubai Campus

BITS Pilani, Dubai Campus (BPDC) was established with the approvals of the Ministry of HRD (Vide Letter No. F.1-8/2000(CM) dated 4th August 2000) and the University Grants Commission (UGC) (Vide Letter No. F.34-18/2000-U.3 dated 6th November 2000) in the year 2000 in response to the growing need for quality engineering education among the residents of the Middle East. The beautiful campus is spread over an area of 14.7 acres in Dubai International Academic City in Dubai, with a built-up area of approximately 5,36,436 sq. ft. It is about 16 kms from Dubai International Airport. All the programs offered at the campus are also approved by Knowledge and Human Development Authority (KHDA), Government of Dubai, UAE. BITS Pilani is the first Indian Higher Educational Institution to set up its campus abroad.

Dubai Campus houses the academic building (main, library and mechanical blocks), hostels for boys and girls, library, sports facilities (playgrounds, indoor play areas, gyms), ATM facility, grocery and canteen. All classrooms, laboratories, offices, hostels and other indoor areas are centrally air-conditioned. Cisco Telepresence classroom and Cisco meeting rooms, campus-wide Wifi infrastructure are the latest addition to our facilities.

BITS Pilani - K.K. Birla Goa Campus

BITS Pilani - K.K. Birla Goa Campus started functioning in August 2004 and was formally inaugurated by Hon’ble Prime Minister of India, Dr. Manmohan Singh on May 5, 2006.

The Campus is spread over an area of 180 acres and the location on campus is unique with respect to scenic beauty and panoramic view of the picturesque surroundings with Zuari

river, hillocks, waterways and forest. The Campus is about 25 km south of Panaji (capital of Goa), 10 km west of Vasco-Da-Gama and 22 km north of Madgaon. It is 5.5 km east of Goa Airport, along National Highway – 17B, bypass road.

BITS Pilani - Hyderabad Campus

BITS Pilani has established its fourth Campus in the city of Hyderabad in 200 acres area in Jawahar Nagar, Kapra Mandal in 2008. For the academic session 2020-21, the campus had admitted 1062 students in its thirteenth batch of First Degree programmes, 295 students in Higher Degree programmes and 140 students in PhD programmes.

The campus is located on the Karimnagar highway and is about 25 kms from Secunderabad railway station; 40 kms from Hyderabad (Nampally) railway station; and 70 kms from Hyderabad Rajiv Gandhi International Airport.

The Institute has a Student Activities Centre housed in a separate building where students have their union office and rooms for various activities. This building also has badminton courts, a squash court, a Table tennis room, a Health Club, an open air amphi theatre and a cafeteria.

BITS School of Management, BITSoM, Mumbai

BITSoM is a world-class business school launched under the aegis of BITS Pilani. It aims to redefine the tenets of business education in India to enable fresh graduates and young professionals to ask the relevant questions, handle workplace challenges effectively, align technology with best practices, reinvent strategic goals and most importantly, learn how to deal with change & adversity — all the while keeping human values at their core.

Leadership

Leadership and governance of the institution are critical in realizing our ambition. BITSoM will be led by the Dean who is ably guided by the Governing Council and the Industry Advisory Council in giving strategic direction to the school.

The members of the Governing Council are:

Mr Kumar Mangalam Birla
Chairman of the Aditya Birla Group

Ms Shobhana Bhartia
Chairperson of Hindustan Times Group

Prof. Souvik Bhattacharyya
Vice-Chancellor, BITS Pilani

Prof. Ranjan Banerjee
Dean, BITSoM

Mr Debu Bhattacharya
Group Mentor, Vice Chairman, Hindalco and Chairman, Business Review Council, Aditya Birla Group

Mr Bharat Puri
Managing Director, Pidilite

Prof. Geoffrey Garrett
Dean, USC Marshall School of Business

Mr Hari Menon
CEO, BigBasket.com

Ms Nishi Vasudeva
Former Chairman and MD of HPCL

Mr Preetish Nijhawan
Co-founder and Partner of Cervin Partners

Prof Rajagopal Raghunathan
Professor of Business, University of Texas Austin

Ms Revathi Advaithi
CEO of Flex

Prof SP Kothari
Professor of Accounting and Finance at MIT Sloan School of Management

Ms Tulsi Mirchandaney
MD of Blue Dart Aviation

Faculty

Faculty is the fulcrum of any school of excellence, and we have hand-picked a stellar line-up from among the leading business schools across the world. These are individuals who are widely regarded as thought leaders in their respective fields.

A few of the faculty who will be teaching at BITSoM are:

Prof Ranjan Banerjee
Dean and Professor of Marketing

Prof Leena Chatterjee
Professor of Organisation Behaviour and Human Resources

Prof Abhijeet Vadera
Singapore Management University

Prof Cait Lamberton
Wharton Business School

Prof Dan Gode
NYU Stern School of Business

Prof Gerard George
Singapore Management University

Prof Luis Martin
McCombs School of Business, University of Texas

Prof Mark Finn
Kellogg School of Management

Prof Milind Shrikhande
J. Mack Robinson College of Business, Georgia State University

Prof Nirmalya Kumar
Singapore Management University

Mr Nish Bhutani
Founder & CEO, Indiginus

Prof Rajagopal Raghunathan
McCombs School of Business, University of Texas

Prof Shamika Ravi
Brookings Institution India Centre

Prof Soumitra Dutta
SC Johnson College of Business, Cornell University

Prof Vera Tilson
Simon Business school, University of Rochester

Prof Ziv Katalan
Wharton Business School

Curriculum and Pedagogy

The curriculum at BITSoM has been designed with the advantage of a clean slate. We have consulted extensively with industry leaders to understand the requirements of the modern workspace, and expectations of organisations in the digital economy. Salient features of the curriculum are as follows:

- A focus on design thinking, analytics and emerging technologies. We have mandatory courses around each of these topics in both the first and second years.
- Students can choose up to two specialisations from a set of five that includes new age specialisations such as Entrepreneurship and Innovation, and E-commerce and Digital Leadership
- We have a strong focus on soft skills. The Winning at the Workplace (WAW) track will offer students courses to develop their emotional intelligence and people skills, courses in liberal arts and essential workplace skills.
- Each student will have a self-development plan made in discussion with the faculty. The student will work on the plan through the two-year programme with structured feedback from the faculty. We believe this will be an essential feature of the experience that will inculcate the habit of lifelong learning.
- Each student will also be assigned a mentor from the industry to guide them on their chosen career path.
- The pedagogy is strongly integrated with industry. Each student will go through an internship at the end of the first year. Additionally, each student will be required to take up a minimum of five live projects across the corporate and social sectors.

Admissions and student selection

Since opening admissions in January 2021, BITSoM has received a strong response from aspiring students. We recruited a founding class of 140 bright young minds. Our students represent a wide range of top-tier undergraduate institutions from across the country.

The admissions process is designed to recruit a diverse set of students, not only in terms of gender but also academic diversity and

diversity in work experience. We assess students based on academic excellence, extracurricular activities, work experience, and standardized test scores (CAT, GMAT and GRE).

The Interim Campus

The interim campus has been set up Hiranandani Knowledge Park, Powai, Mumbai. Spread over 50,000 square feet, it has been designed to accommodate all the facilities expected of a top end business school:

- Two stepped classrooms
- Two flat classrooms
- One multipurpose hall
- Library
- Breakout spaces
- Cafeteria
- Digital multimedia studio
- Wellness centre

The Permanent Campus

Our upcoming permanent campus is spread over a lush 60 acres in the Mumbai Metropolitan Region. We endeavour to make this a highly environmentally friendly campus to truly embody the spirit we hope to inspire in the next generation of leaders.

Designed by the renowned architect Hafeez Contractor, it will be state-of-the-art and pedes trian-friendly, and at par with the best business schools in the world.

Some of the key features of the campus are as follows:

- Campus Location: Approximately 60-acre campus with large green areas and a natural water body, ~1hr 45mins away from Mumbai airport
- World-class infrastructure: Fully residential modern campus equipped at par with the best institutes in the world
- Digitally enabled classrooms: Classrooms will be digitally equipped with tablets as command centers, projectors, telepresence, and smart devices for optimizing learning experience
- Business Incubation Centre: Cutting-edge business incubation center equipped with video conference, computers built for data science, and interactive tables
- Video Studio: Fully equipped video studio open for faculty and students for the creation of multimedia content

The design principles for the campus are:

- Integrated Master Planning
- Environment Friendly Complex
- Dedicated Zones for Academic /Faculty Housing and Student Housing / Sports
- Optimizing Use of Land Low Rise Buildings
- Pedestrian Friendly Campus
- Courtyard Formations
- Shading Devices and Solar Panels
- Integration of Water Streams with Water Bodies
- Facilities for Students

Institutional address:
8th Floor, Hiranandani Knowledge Park
Powai, Mumbai – 400076
Phone: 8050012004
Homepage: https://www.bitsom.edu.in

INTERNATIONAL STUDENTS ASSOCIATION

The International Students Association at BITS established to bring together the greatly diverse international community. The ISA works to bring elements from our distinct and richly diverse cultural backgrounds to share them with the BITS community at a cultural, academic, and social level. It is a Student advisory board of foreign students studying at BITS with a faculty member as an Advisor. The association organizes cultural activities and extends all possible help to foreign students whenever required.

International Student Admission in Integrated First Degree Programmes

In order to introduce transnational diversity and to embark upon making BITS Pilani a global university, the Senate has approved an alternate merit based mode for admitting international students to the integrated first degree programmes. Any student who is a not a citizen of India is eligible to apply through this scheme for which the admission will be based on performance in Scholastic Assessment Test (SAT) conducted by the College Board (USA) in Mathematics, Physics, and Chemistry.

FACILITIES AT CAMPUSES

Pilani Campus and Its Adjoining Facilities

Shiv Ganga and Saraswati Temple

Shiv Ganga is a central beauty spot of the Vidya Vihar Campus with 400 meters circular canal and the Sharda Peeth, a beautiful white marble temple dedicated to Goddess Saraswati.

Guest Accommodation

Limited facilities are available for board and lodging on payment at the VFAST Hostel (Visiting Faculty and Students Hostel) which is near the entrance of the Campus. Other accommodation facilities are also available at (i) Alumni Home (Requests should be addressed to Public Relations Officer, Birla Education Trust, Pilani), (ii) CEERI Guest House (Requests should be addressed to Administrative Officer, CEERI, Pilani) and (iii) Some guest houses and dharamshalas in the city operated by private agencies.

Schools/Colleges

There are several Middle and Primary Schools in Pilani. The Secondary schools are affiliated to Central Board of Secondary Education; prominent being Birla Public School, Birla Senior Secondary School, Birla Balika Vidyapeeth (for Girls upto 10+2) and Birla Shishu Vihar, a Co-educational Secondary School, located in Vidya Vihar Campus. Adjoining the Vidya Vihar Campus, there is Engineering and Technology Institute, Commerce & Arts College and a Polytechnic Institute. These schools and colleges are run by Birla Education Trust and other Educational Societies.

Blossom Kids-zone

The Blossom Kids-Zone (BKZ) is run voluntarily by faculty wives and it takes care of the pre-school training and education of the children in the age group of three to five years. The center primarily caters to the needs of staff children belonging to BITS and the sister organizations.

Bank and P&T Service

Within the Vidya Vihar Campus there is a branch of UCO Bank with ATM facility. In the adjoining CEERI Campus there is a branch of the State Bank of Bikaner and Jaipur, with ATM facility. Vidya Vihar Campus also have ATM facility of Axis & ICICI Bank. Pilani also have ICICI, Axis, SBI, PNB Banks. The Pilani Post office is located within the Campus, while a Telegraph office is situated in the CEERI Campus.

Shopping Centers

AKSHAY, a Supermarket, located in the heart of the campus in an area of 7500 sq.ft. with an elegant modern building is a part of BITS Consumers' Cooperative Stores Ltd. (BITS Coop). Student volunteers of the Institute have worked with management of the BITS Coop in the establishment of the Supermarket. It has various sections for consumable items where the customers can choose and pick-up the items of their choice and pay on the cash counter. General provision, sanitary goods, cosmetics, snacks and other food items, Bakery and Dairy products, books & stationery, fruits & vegetables are made available to the students and staff at reasonable rates.

Birla Museum

The Birla Museum is located adjacent to the Institute Building. It is the first science and technology museum established in the country. Most of the exhibits and models incorporate stimulating animations and visual effects.

Central Electronics Engineering Research Institute (CEERI)

Adjoining the Campus, there is the Central Electronics Engineering Research Institute. It is one of the National Laboratories under the Council of Scientific & Industrial Research (CSIR).

STUDENT LIFE

Student Housing

The Institute is fully residential and hostel accommodation is providedfor all students. There is a hostel for married research scholars. Each room has a separate kitchen and washroom. Permission to become day-scholar may be granted only under exceptional circumstances where student's parents or close relatives are residents of Pilani

There is a central kitchen from where food is served to all messes for every set of two boys' hostels. Each unit of the mess serves vegetarian and non-vegetarian food, and the unit operates under the management of the students' mess committee. The girls' hostel has a separate mess of its own, situated within the boundary of the hostel. Students staying in the hostel have to necessarily take their food in the hostel messes. Every inmate of the hostel is provided with necessary furniture and fixtures in the room. Each hostel is equipped with solar water heating systems. Common room facilities like TT table, carrom etc. are available in each hostel. Internet connectivity has been provided in all hostel rooms.

The details of the girls, boys and married research scholar hostels are given below:

S.N	Bhawan	Code	Single Seated Room	Double Seated Room	Total Capa-city
1	Ashok	AK	150	0	150
2	Bhagirath	BG	150	0	150
3	Budh	BD	172	100	372
4	Gandhi	GN	174	112	398
5	Krishna	KR	174	108	390
6	Malviya	ML-A	140	0	140
		ML-B	140	0	140
		ML-C	182	0	182
7	Ram	RM	178	110	398
8	Malviya Studio Apartment	MSA	0	60	120
9	Rana Pratap	RP	150	0	150
10	Shankar	SK	174	111	396
11	Sir C.V. Raman	CVR	201	0	201
12	Srinivas Ramanujam	SR	0	206	412
13	Vyas	VY	174	111	396
14	Vishwakarma	VK	190	38	266
15	Meera	MR-0	108	0	108
		MR-1	49	0	49
		MR-2	49	0	49
		MR-3	49	0	49
		MR-4	49	0	49
		MR-5	0	49	98
		MR-6	74	0	74
		MR-7	40	0	40
		MR-8	40	0	40
		MR-9	0	174	348
16	Research Hostel	RH-A	90	0	90
		RH-B	72	0	72
		RH-C	18	0	18
		RH-D	24	0	24
		RH-E	4	0	4

Student Activities Centre

The Institute has a Student Activities Centre housed in a separate building where students have their union office and rooms for various activities. This building also has badminton courts, a squash court, a Table tennis room, a Health Club, an open-airamphitheater and three food outlets.

Cultural and Recreational Activities

The Institute has following clubs and societies: Music, Dance, Hindi Drama, English Drama, Hindi Press, English Press, Creative Activities, and Mime clubs; English Language Activity and Hindi Activity societies. These are entirely

managed by the students and have been nurturing the creative and cultural talents of the students. In addition, the Institute has a Recreational Activity Forum, Photography Club, SwimmingClub, and Health Club whose membership is open to students and staff. The Institute also organizes Theatre and Dance workshops. A classical music group called 'Ragamalika' aims at encouraging budding talent among the students in music and dance. It also arranges performances by leading artists in the field of classical music and dance. In addition, there is also a BITSPilani Chapter of SPIC-MACAY which organizes programmes to promote Indian classical music and culture amongst youth.

Recreational Activity Forum (RAF) regularly organizes film shows for the BITS community. BITS being an all-India Institute, students have also established regional associations representing almost all Indian States conducting several special programmes on festive occasions.

Physical Education

Physical Education of the Institute aims at providing a safe atmosphere to enable students and staff members to exercise to their potential whilst achieving their goals. It offers a variety of fitness, wellness, and recreation opportunities, and Fitness Programmes including Yoga and Martial Arts. Physical Education has major facilities that include the Health Club, Swimming Club and Sports Club. The Health Club is equipped with single and multi-stationed machines and weight training facilities to provide students with an opportunity of doing exercise for physical fitness. The Swimming Club has a swimming pool of 25 m in length while the Sports Club has various indoor and outdoor facilities for students to take part in sports and games. The indoor facilities are Badminton, Table Tennis and Squash with synthetic flooring while outdoor facilities are Basketball, Football, Hockey, Volleyball, Cricket, Tennis, Track & Field (400 m) etc. Sports and fitness activities are supervised by the qualified and experienced staff members of the Institute.

Festivals on Campus

Traditionally students organize three festivals during an academic year. BITS Open Sports Meet (BOSM) in September, a sports festival; OASIS, a cultural festival in October and APOGEE (A Professions-Oriented Gathering Over Educational Experience), an Academic Festival in February thus bringing about a beautiful blend of sports, cultural and academic milieu of the campus. All the three festivals are entirely managed by students in which many students from all over India actively participate.

Students' Participation in Institute Activities

Students actively participate in various continuing and developmental activities of the Institute as follows:

There are four students as members of the Senate – one representing each campus, two students in the Senate-appointed Academic Counselling Board and two students in the Senate-appointed Standing Committee for Students' Discipline in each campus. In addition, senior students act as mentors to junior students in the registration process. Some students are also associated with the course development activities. Students participate as associate members in the activities of various Divisions of the Institute. Their contribution to the projects and research activities of the Institute has always proved to be very useful.

STUDENT SERVICES

Orientation and Counselling

At the time of admission, the Institute organizes an orientation programmein order tofamiliarize the new students with the Academic Programmes at BITS and to give them an idea about their campus life and co-curricular activities. The Vice Chancellor, Director, PilaniCampus and senior faculty members meet the parents of Freshmen and Freshwomen at an interaction session organized at the time of admission.

Faculty members act as Advisors and Mentors for groups of students to guide them in the registration process and encourage them to discuss any matter –academic and non-academic with them during their stay at BITS campus. Students can also approach their wardens for any help or guidance related to academic or personal matters. Hostels have Resident and Non-resident Wardens drawn from the faculty. In addition, there are Hostel

Superintendents to assist the Wardens in matters related to the upkeep of the hostels and attending to the needs of the students.

Discipline Associations

Associations formed by students of various academic disciplines organize extension lectures, paper reading seminars, etc. They also arrange symposia in which professionals from industries and other universities participate. These associations organize exhibitions of working models during APOGEE, the academic festival.

National Service Scheme

The Institute has a National Service Scheme (NSS) chapter, which enrolls about 250 students every year. NSS aims at developing amongst students a sense of participation in nation building through social work. From past few years, the NSS volunteers of the Institute work in the surrounding villages and involve the villagers in activities like awareness camps, health camps, tree plantation drives, etc. Other activities like Blood Donation Camps, Junoon, Swacch Bharat Campaign and seminars on Right to Education are organized for the local people as well as the students. The Blood Donation Camp conducted in Feb, 2020 had a total collection of 641 units of blood. NSS has a school in campus where tutorials and personality development classes are conducted for more than 100 local students of Pilani with great zeal and enthusiasm. During the pandemic, the NSS volunteers are providing the education to kids through online mode. Counseling sessions are also conducted at regular intervals. Volunteers put emphasis on overall development of the students. Under the Umang program, the NSS team supported the education of around60 students. The students also work in the surrounding villages to impart computer literacy to children studying in government schools. The students have also implemented a lot of technical solutions of grass-root level problems over the last few years.

NIRMAAN

Nirmaan Organization is a constructive citizen movement for an empowered India. This social Organization founded on 12th February, 2005 by a group of BITS-Pilani students, is now spread over all the BITS campuses Pilani, Hyderabad and Goa and also with full time chapters in Bengaluru and Hyderabad. Nirmaan has been phenomenal in creating greater impact in areas of educational initiatives, livelihood opportunities and socio-technological sectors. Currently the Nirmaan workforce stands at around 1000 across India and corporate chapters at US, UK and Singapore.

With more than 150 active volunteers, NirmaanPilani chapter is impacting the lives of around 1000 beneficiaries with its activities like Eye checkup camp, Public toilet construction, Menstrual Health awareness camp, Cleanliness drives, Kadam, Tree plantation drive etc. The evening tuition program of Nirmaan is benefiting more than 200 kids. 2 vocational training centers under NirmaanPilani are empowering more than 50 women of Pilani to earn their livelihood. With the help of Utkarsh scholarship program, 30 meritorious students are continuing their study. Under the School Adoption Program, a new govt. school has been adopted to take care of its overall development. This student run voluntary organization is constantly working towards its vision of “rising of a great nation” by providing cost effective and easily implementable solutions to the problems of the rural population.

Medical Centre (MedC)

Medical centre is providing healthcare services through its team of dedicated specialist doctors. Two doctors, Dr Sanjana R Bhat, Gynaecologist (Dy. CMO) and Dr.Bibin Chandran (Medical Officer)are fulltime doctors available at the centre while other specialists visit on different weekdays. ENT specialist Dr. H.S.Sankhla visits the centre on every Monday and Thursday evenings, the paediatrician Dr. Karan Singh Beniwal on all Wednesday evenings, the Dentist Dr.Sanjay Katewa on all Saturday evenings, the Ayurvedic doctor Dr.Ramesh Jaju on all Sunday mornings and the homeopathic doctor Dr. Diwakar Pathak is available on all Tuesday evenings. Besides these specialist doctors, a General Duty Medical Officer from Birla Sarvajanik Hospital visits MedC for evening OPD’s.

There is a computerized system for registration, investigations and procurement of medicines from MEDC pharmacy thereby making all records available in a digital format and making all transactions cashless. Medicines from the pharmacy are available on prescription only. The pharmacy remains open till 12 midnight on all working days.

MedC has a fully equipped 1 bed emergency observation room equipped with emergency medicines and a multi-parametric patient monitor to take care of any medical emergency.

Medical centre has a well-equipped clinical laboratory. Besides having fully automated biochemistry and haematology analysers, machines for performing glycosylated - haemoglobin (test for diabetes), serum electrolytes and urine comprehensive examination tests are available. Computerized ECG machine, a spirometer and a digital dental X-Ray unit are also available at MedC. Installation of a new automated immunoassay analyser, for carrying out the Thyroid function test and Serum 25-hydroxy Vitamin D3 test, Hepatitis-C, has been done.

From 1st April 2020-31st March 2021, despite the lockdown measures due to COVID-19, medical centre recorded a total of 6515 new patient visits and 18672 were patients with old registrations. 1884 patients underwent various haematology and biochemistry tests.

Besides curative services, the doctors at MedC provide preventive services by sending Emails to the students/faculty and staff on various topics of public health importance. The topics covered range from latest information about COVID-19, adolescent health, anaemia, nutrition and health, obesity, osteoporosis, diabetes, cardio-vascular diseases etc. MedC has also been conducting health camps at various villages adopted by NSS in collaboration with NSS students (before the onset of lockdown due to COVID-19).

Doctors and staff at MEDC provided 24*7 consultation/monitoring and help for COVID 19 positive diagnosed cases, while in quarantine, through whatsapp and in-person visits. All the cases made a full recovery.

Campus resident can seek help for any medical emergency 24*7

Medical Centre has been chosen as a primary care centre for BITS employees covered under ESIC scheme since September 2017.Besides the routine outdoor services provided to these patients, special medical camps are being organized for these patients from time to time. The entire process is computerized, the details of which are provided to ESIC on a monthly basis.

New additions at MedC in the year 2020:

Availability of Oxygen concentrator for patients in recovery room.

In collaboration with Lal Path Lab Jaipur additional blood tests like PSA, harmonal tests, PCOD profile, Vitamin B12, Serum Iron studies, Hb electrophoresis etc are being done

PLACEMENT AND CAMPUS INTERVIEWS

A separate unit deals with this important activity. Around 279 companies have visited the institute this year to interview students who are about to graduate. The number of such interviews has actually grown considerably over the years. As the student population in the final year is divided into two batches, one going to practice school in the first semester and the other in the second semester, only one half of the final year students will be available for campus interviews during a particular semester. Hence many organizations find it worthwhile to conduct the campus interviews in both semesters so that they can interview both the batches on campus itself. The institute also tries to arrange interviews for practice school students in and around their own practice school centers. The impressions given by the representatives of industries about students are continuously fed back to the concerned divisions and departments. Organizations that have visited campus for interviews, are shown in the following table.

Organizations conducting Campus Interviews

S.No.	List of Companies
1.	Accenture
2.	Addverb Technologies
3.	Aditya Birla Group(Hindalco)
4.	Adobe
5.	Aeques
6.	Almaconnect
7.	Alphonso
8.	Amazon
9.	Amdocs
10.	Anand Group
11.	Apisero
12.	App Dynamics
13.	Apple
14.	Arcelor Mittal
15.	Arcesium
16.	Arete Advisors
17.	Arjuna Academy
18.	Arteria Technologies
19.	Arup
20.	Astrome
21.	Atlassian
22.	Axiom
23.	Axis Bank
24.	Axtria
25.	Axxela Advisory
26.	Bajaj Finserv
27.	Barclays
28.	Baxter
29.	BCG
30.	BCN
31.	Beehyv
32.	Better.com
33.	Biocon
34.	Birlasoft
35.	Bitmapper
36.	BluePi Consulting
37.	BNY Mellon
38.	Boxfile
39.	Bridgei2i
40.	Brightchamps
41.	Browser Stack
42.	Byju's
43.	C2L Biz Solutions
44.	CGI
45.	Cipla
46.	Cirel Systems
47.	Cisco
48.	Citi Bank
49.	Citrix
50.	Cleartax
51.	Codenation
52.	Cognizant
53.	College Dekho
54.	College Dunia
55.	Comcast
56.	Commvault
57.	Comsol
58.	Confluent
59.	Consulting Engineers Group Lim
60.	Conveneindia
61.	Credit Saison
62.	Credit Suisse
63.	Curefit
64.	Cypress Semiconductors
65.	Dalberg
66.	Data Zymes
67.	DBOI
68.	DE Shaw
69.	Deloitte
70.	Demand Matrix
71.	Deskera
72.	Developments Consultant Pvt Lim
73.	Docsapp
74.	Doubtnut
75.	Draup
76.	Dreamplug Technologies
77.	DRL
78.	Dunjo
79.	E2Open
80.	Ecom Express
81.	Edgeverve
82.	Eight Fold
83.	Energy Exemplar
84.	Evaluserve
85.	Eversana
86.	EXL
87.	Extra Marks
88.	Exxon Mobil
89.	Fiorano
90.	Firstsource Solutions Lim
91.	Fischer Jordan
92.	Fiserv
93.	Flipkart
94.	Fractal Analytics
95.	Futures First
96.	GAIL
97.	Gamescraft
98.	GE India
99.	GirnarSoft Education Services Pvt. Ltd.
100.	Goldman Sachs
101.	GoLorry
102.	Goodera
103.	Google

S.No.	List of Companies
104.	Grey Orange Robotics
105.	HCL
106.	HDFC Life
107.	Hevo
108.	Hexaware
109.	HSBC
110.	HUL
111.	ICICI BANK
112.	ICICI Lombard
113.	IDFY
114.	Incedo
115.	Incred
116.	Indegene
117.	Indus Insights
118.	Infor
119.	Inmobi
120.	Innominds
121.	Innoterra
122.	Integrated Active Monitoring Pvt. Ltd. , Pune
123.	Intel
124.	Intello Labs
125.	Intercontinental Consultants and Technocrats
126.	Intuit
127.	Ion Energy
128.	IQVIA
129.	Jacobs
130.	JPMC Quant
131.	JPMS
132.	Jumbotail
133.	KLA Tencor
134.	Knolskape
135.	Komprise
136.	KPMG
137.	L&T Infotech
138.	L&T Lim
139.	Landmark Group
140.	Lentra.AI
141.	Licious
142.	Linecraft
143.	Linkedin
144.	Loreal
145.	Lynk Logistics
146.	Mahindra Logistics
147.	MapMyIndia
148.	MAQ Software
149.	Markets & Markets
150.	Matdun Labs
151.	Maybank
152.	Media Net
153.	Mercedes

S.No.	List of Companies
154.	Merilytics
155.	Micron
156.	Microsoft
157.	Mondelez
158.	Mphasis
159.	MTX
160.	My Smart Price
161.	Myntra
162.	Nagarro
163.	Nav Backoffice
164.	Netapp
165.	Netcracker
166.	Newgen
167.	Novartis
168.	Nutanix
169.	NXP Semiconductors
170.	O9 Sol
171.	Odessa
172.	Oneshot.ai
173.	Oracle
174.	Orbees
175.	PATH
176.	Paypal
177.	Paytm
178.	PayU
179.	Pegasystems
180.	Pensando
181.	Pepper
182.	Petasense
183.	Pfizer
184.	Pharmaace Analytics
185.	Pharmeasy
186.	Phillips
187.	Picxy Digital Services Lim
188.	Piramal Enterprises
189.	Pixxel
190.	Postman
191.	Procdna
192.	Publicis Sapient
193.	PWC
194.	Q3 Technologies
195.	Qualcomm
196.	Raam Group
197.	Rakuten
198.	Razorpay
199.	Real Time Data Services
200.	Rebel Foods
201.	Reckitt Benckiser
202.	Redseer Management Consulting Pvt Lim
203.	Reflexis
204.	Reliance Jio

S.No.	List of Companies
205.	Rivigo
206.	SalesForce
207.	Samsung R&D
208.	Samsung SSR
209.	SAP Labs
210.	Sattva Media & Consulting Pvt Lim
211.	Schlumberger
212.	Schneider Electric
213.	Searce
214.	Secureworks
215.	Sedemac
216.	Service Now
217.	Shaadi.com
218.	Siemens
219.	Signalchip
220.	Signalchip
221.	Silicon Labs
222.	SKF india
223.	Snapdeal
224.	SocGen
225.	Sona Comstar
226.	Sprinklr
227.	Standard Chartered
228.	Stantec
229.	Strand Life Sciences
230.	Synopsis
231.	Tally Solutions
232.	Target
233.	Tata Power
234.	TataAIG
235.	TCG
236.	TCS
237.	Techmojo
238.	Techture Structures Pvt Lim
239.	Tejas Networks
240.	Tekion
241.	Teradata
242.	Texas Instruments
243.	The Thick Shake Factory
244.	Times Internet
245.	Tirupati Group
246.	Trifacta
247.	Truckx
248.	Truminds
249.	Uber
250.	Udaan
251.	Uni
252.	Upgrad
253.	Urban Company
254.	Vedanta
255.	Venue monk
256.	Viacom 18

S.No.	List of Companies
257.	Visilean
258.	Visit Health
259.	VM Ware
260.	Wabco
261.	Walkover
262.	Walmart
263.	WCB Robotics
264.	Wells Fargo
265.	Western Digital Corp
266.	Whirlpool
267.	Wipro
268.	WSP
269.	XPO
270.	Yashraj Biotech
271.	Yellow Messenger
272.	Zaggle
273.	Zinnov
274.	Zivame
275.	Zluri
276.	Zopsmart
277.	ZS Associates
278.	Zwende Design Tech Pvt Ltd Bangalore
279.	Zynga

Alumni Relations Division

BITS Alumni (called as BITSians) are spread across the globe. The BITSians have done their alma mater proud by taking top position in every sphere of life – corporate, entrepreneurship, academia, civil services, literature, performing arts, defense, social services and so on. Congratulations on becoming the newest member of this ever growing family of highly accomplished individuals.

The BITS Alumni Association (BITSAA) at Pilani was functioning from 1989 as a nodal agency for maintaining liaison with Alumni all over the world and to involve them with the development of the institute. A new division, Alumni Affairs (BITSAA) Division, was created in 2010 to give distinct thrust to the activities related to Alumni and to connect and engage students, alumni, friends and well-wishers for a long-term relationship with BITS Pilani. It focused on development of alumni support to the continuing development of the Institute's academic, research, and off-campus programs, expansion and renewal of its facilities, and providing scholarships and financial aid to

students through annual fundraising campaigns.

To manage and provide alumni a single window interface to their alma mater, Alumni Relations Division was formed in 2017. The key objective of the division is to connect and engage with alumni on a range of programs. The division organizes many such programs such as reunions, research talks, lectures, webinars, amongst other on-campus events. The alumni are also offered teaching engagement in the form of adjunct / visiting professorships and can avail of sabbatical scheme to teach a semester at BITS campuses.

The role of Alumni Relations Division includes the following:

- Constantly connect with alumni, and conceptualize, develop and organize various alumni led initiatives.
- Plan, implement and promote alumni programs that support the BITS Pilani strategic initiatives.
- Establish and build relationships with local, regional, national and international alumni chapters.
- Maintain regular communication with alumni.
- Educate graduating students about alumni benefits and engage them in various programs.
- Partner with various offices of the institute to spearhead the introduction of alumni involvement in the growth and continued leadership of the University.
- Seek alumni involvement for placements of graduating students and for promotion of entrepreneurship amongst students.

The division also makes it convenient to help alumni contribute funds towards advancement of their beloved institution. Some of the key areas in which the alumni have contributed are Scholarships. Student and Faculty Awards, Chair Professorship, Research Labs, Sports Infrastructure etc. The division is also responsible for raising funds through the Corporate Social Responsibility (CSR) for institutional development activities.

Student Alumni Relations Cell (SARC), a student-led body is formed at each campus that furthers the aims of enhancing and improving our connect and engagement with the alumni.

BITSAA - International

BITSAA International is a global association formed and managed by BITS Alumni. BITSAA operates through city-based chapters and is headquartered in New Jersey, USA. BITSAA undertakes a number of events, such as BITSian Day (celebrated every first Friday of August), get together events, and welfare programs for alumni in distress. The Alumni Relations Division works in close coordination with BITSAA for its objectives.

For more details on the activities of the division, please visit bits-pilani.ac.in/alumni.

Alumni Lifetime Membership Fee

All graduating students automatically become Alumni Member and a Lifetime membership fee of Rs 1000 is charged across three Indian campuses and AED 50 at the Dubai Campus.

Human Resource Section

The inception of the Human Resource Section was from September 12, 2018. The Human Resource Section shortly known as the HR-Section is a facility that maintains the employee personal records, executes the payroll (through ERP), recruits' employees, appraises the employees through the PMS process, organizes training and development programmes for the non-teaching staff, handles the day to day general administration activities for the campus. Some of its key activities are mentioned below:

Activities like appointments, employee on-boarding during recruitment, Performance Management System (PMS)- looks after Promotions, Regularization of the non-teaching staff. Employee Welfare & Statutory Activities like the PF (maintained for all the Indian Campuses), ESIC, Family Pension, Loans (for e.g. Furniture loans, Computer loans & Housing loans), Fee benefit, Medical benefit, Reimbursement of Relocation Expenses, LTC, issuance of employee ID cards, renewal of existing empaneled hospitals and other kind of welfare activities that are required for the

employees are catered by this office. Issuing Certificates, letters to the staff based on the need, constant updation of employee information, disciplinary actions are some of the major activities handled by this office.

CENTRAL FACILITIES

Central Library

The BITS Pilani library is housed in a state-of-the-art building, covering about 65000 sq.ft area and is located close to all academic blocks of the Institute. The library indeed is an architectural marvel with an attractive palatial interiors, high ceiling, adequate natural lighting and ventilation with several series of courtyards, with each used for different activities. Inside the library, there is a layout of natural green plants that are soothing for the eyes. The library has a seating capacity for more than 950 students in one go. This year the library created new spaces like Ideation Zone, Multimedia Room in addition to the last year's Innovation and MakerSpace, BITS Heritage Gallery, Brainstorm Room, Group Discussion Room and Research Zone, E-Zones, AC Reading Rooms with necessary IT infrastructure to serve the needs of the modern tech savvy users.

To support the online teaching and learning due to COVID-19 pandemic the library is providing remote access to all the digital content in the form of databases, E-Textbooks, etc using Shibboleth platform with the help of INFLIBNET.

The library aims to support the teaching, learning and research activities of the institute with specially designed information services to meet the needs of its users. The library is fully automated with RFID technology integrated with KOHA library management software that provides quick and efficient circulation operations, enhanced security for Library print collection, seamless inventory management and provides latest technology experience to its patrons. The Online Public Access Catalogue with efficient searching facility can be accessed from anywhere within the campus through Wifi and LAN. The library includes well-lit reading halls, stacks, display areas, e-library zones, audio-visual cum brainstorm facility and study carrels.

The collection consists of over 2,50,000, books including rare books, textbooks and bound volumes of journals since 1920s. Besides core subjects, the stock also covers a good blend of reference material in the form of Dictionaries, Encyclopedias, Handbooks, Yearbooks, Theses, Standards etc. The library also provides access to millions of E- Books.

The library has made a special effort to preserve rare books by establishing a state-of-the-art air-conditioned **G.D Birla Rare Books Section** - in Hall No. 3. This newly set-up section has a remarkable stock of scholarly rare books, manuscripts, paintings and photographs which are timeless and invaluable. Many of these rare books are published almost about 150 and 200 years ago. The library staff has been trained to preserve rare books. by using German Tissue paper. So far more than 150 valuable and scholarly rare books have been preserved using this technique and the work is in progress.

Library subscribes to over 113 print National and International journals. It has access to over 80,000 full-text e-journals through 34 online databases such as ACM, IEEE, ASCE, ASME, Springer, Science Direct, Wiley, IOP, Project Muse, ACS, SciFinder, Scopus, Emerald, EBSCO,JSTOR, OUP, Indiastat, ProwessIQ etc.. covering all branches of Science, Technology, Engineering, Economics and Management, Humanities and Social Sciences. These can also be accessed from hostel rooms as well as from faculty residences. In addition to books and periodicals, the library has a good collection of non-book material namely Audio CDs, Videos, DVDs, CD ROMs, etc to cater to the educational/academic and research needs of students as well as faculty. These electronic resources are made available through an interactive and dynamic library portal called **infoBITS**. The portal provides an integrated search engine called **One Search** which is an online discovery tool that "pulls together" BITS Pilani Library resources so that users can be explored using a single search box. In other words, instead of searching individually the different resources such as WebOPAC, databases, E-books, Institutional Repository etc, users can use One Search and get the most relevant results using advanced scholarly filtering techniques.

There are 45 public access terminals in the library. The library provides Internet connectivity even for the readers' laptops.. The renovated Text Book section in Hall 5 provides all latest text and reference books for study in the library. Photocopying facility on First Floor is also available in the library premises.

The library has implemented two institutional repositories namely **E-Print** and D**-Space** which provide access to Institute's research and academic output. Currently repositories contain faculty publications, Theses, digitized books and institutions events audio visuals, etc.

BITS Pilani Heritage Gallery (BHG)- This is the modern, state of the art gallery showcasing the historical, cultural, educational and rich legacy established by this great institute and how it has evolved from Patashala to the current status of Institute of Eminence (IoE) in the country. It has a display of framed photographs and many other important documents and literature in a chronological order. It also has a separate digital display of audio-visual content which can be retrieved through a search engine developed by the BITS Pilani library in collaboration with students.

Library Rules

i) The Central library is meant for the use by faculty, staff, research scholars and students of the Institute. Only those students who are registered for the academic programmes of the Institute are entitled to the library facilities and services.

ii) The entitlements for members and the duration of the loan are as follows:

Category	No. of Books	Duration
Faculty	30	135 Days
Research Scholars	15	30 Days
Students(UG/PG)	10	15 Days
Non-Teaching	5	30 Days

The books can be re-issued provided they are not reserved by other members.

iii) **Self-Check in and Check out Procedure to use Smart-Serve Kiosk**

To use this kiosk for the first time, please contact the Library Staff at Issue/Return Counter. a) Your PSRN No / ID No is your User ID

b) Re-set your password when you meet the library staff at the Main Counter.

Follow the steps below to Borrow the Books:

a) Please keep maximum 8 books at a time on the glass surface.

b) Click on 'Borrow' option, provide your user name and password,

c) On the screen, you will see the list of book kept on the glass surface.

d) If any book title is missing on the screen, please report the same to the staff at Issue/Return counter to resolve the problem.

e) Click on 'Finish' and choose 'Yes with slip"

f) Collect your Book/s and slip for completed transaction.

g) Get the Due Date stamp put on the book/s at the Issue/Return Desk.

h) If RFID gate blinks 'red light' while you are passing through it with books, please contact the library staff at the Issue/ Return counter along with the books.

Follow the steps below to Return Books:

a) Please keep maximum 8 books at a time on the glass surface. Click on 'Return' option.

b) On the screen, you will see the list of book kept on the glass surface. Click on 'Finish'

c) If any book title is missing on the screen, please report the same to the staff at Issue/Return counter to resolve the problem.

d) Click on 'Yes with slip'

e) After returning, please keep the books on the trolley next to the Kiosk

iv) Books which are on loan may be renewed for a further period of 15 days or one month as the case may be, provided no other reader has requisitioned the book in the meantime. For renewal, either the book needs to be brought to the library to get the new due date stamped at the issue counter or simply send an e-mail request at helpdesk.library@pilani.bits-pilani.ac.in

v) The members will receive a system generated reminders for overdue books. When such reminders are received, the students are expected to return the books immediately or get them re-issued at the

issue counter or simply by sending an e-mail at helpdesk.library@pilani.bits-pilani.ac.in

vi) A book can also be returned through another member,

vii) The Librarian has the right to recall any book at any time.

viii) A book which is on loan can be reserved online using Online Catalogue (KOHA) on the library portal http://library.bits-pilani.ac.in

ix) The following categories of books/journals are generally not issued:
a) Rare books b) Current issues and bound volumes of periodicals c) PhD theses d) other materials as specified by the Librarian.

x) The books can be borrowed by producing the Institute ID card issued by the SWD. The ID card is not transferable. The ID card needs to be kept in safe custody and the member is responsible for any books issued against the ID card. In case the card is lost, the matter has to be reported immediately both at the SWD and library so that misuse of the card can be prevented.

xi) The student should access his/her "check out" records either at the Issue/Return counter or on the library online catalogue from time to time and bring the discrepancies, if any, to the notice of library **Help desk** immediately.

xii) Before borrowing, the book should be checked by the student for missing pages and any damage may be brought to the notice of the staff at the Help Desk.

xiii) Students will be responsible for any loss or damage to the library material, while under their use, and shall be required to replace or pay the current cost of such materials as decided by the Librarian, plus a processing fee of Rs 20/- per each lost/damaged item being replaced.

xiv) The Librarian reserves the right to withdraw facilities from any student, who violates the rules and regulations of the library.

xv) Students should cooperate with Help Desk at the entrance.

xvi) The RFID gates at the entrance of the library will detect the unissued books and make a sound/signal. When such incidents happen, students are required to report immediately to the person at the Help Desk.

xvii) The library system automatically sends e-mails regarding the issued or returned items to the patrons when such transactions happen.

xviii) Students may take care of their personal belongings. Library will not take any responsibility for the loss of personal belongings of students.

xix) **Reference and Text Books**

Students may borrow Reference and Textbooks from the Textbook Counter (Hall No.5) for overnight half an hour before closing the library and are expected to return the same the next day morning before 9.15 am.

xviii) **Lost and Found items**

The lost and found items by the library staff are kept separately in the library. These items are included in the "Lost and Found" page of the Library Portal and can be claimed by the procedure laid down on the library portal.

xix) **Photocopy and Stationery facilities**

- This facility is available on the first floor
- Photocopying of complete book is a violation of copyright law and therefore it is forbidden. Only 10% of a book is allowed to be photocopied.
- For, photocopy work of more than 20 pages (i.e. continuous pages from one book/journal/thesis), a Photocopy Request Form has to be submitted. The request form is available with the photocopy operator.
- Reference and Text books should not be left for photocopying at the photocopier to be collected later. This inconveniences other readers who need the same book. In case there is a rush, please come again during lull period and submit the same book for photocopying.
- During peak hours, photocopies of less than 10 pages will be given priority

xx) **Research Zone**

To support the research activities in the campus a Research Zone has been established in the **Hall No. 4** where all the latest books acquired using project funded books on research, last 5 years Ph.D theses, Research@BITS Publications and research tools are kept. Faculty Publications are also displayed in this room. The Research Zone has one LED screen with Internet connection where research scholars can book this room to make presentations and to conduct meetings, workshops, seminars etc.

xxi) **Entry and Exit Rules**

The students are expected to enter their ID No's in the computers at the main gate every time they enter or exit the library.

The library remains open throughout the year (except on three national holidays) from 9 am to 12:00 p.m. on all working days. The opening hours of the library are extended 24X7 during Mid-Semester and Comprehensive examinations.

A list of New Arrivals is sent to all students and faculty members through root mail every week and also these books are displayed for one week in New Arrivals section in the Library Lobby Area.

xxii) **Online Portal infoBITS**

Through the interactive library portal **infoBITS,** all library services such as Daily News, Monthly infoBITS Bulletins, Book Finder, Periodical Finder, Books@MyDesk, Lost and Found Items, Suggestions/Complaints, Book Reviews, Feedback, book of the week are made available. All library resources are also made available through the library portal

The library organizes many events throughout the year to inculcate reading habits among the students. Basant Book Festival, World Book and Copyright Day, Summer & Winter Reading Challenges are just a few to name.

xxiii) **Innovation Zone Cum MakerSpace**

This room can be used for Innovative projects - Ideation, Product Design, Rapid prototyping, Brainstorming etc. The person booking this facility is responsible for the co-ordination of the event or activity happening in this room. It is important to read the Rules and Regulations for using Innovation zone on the library portal carefully prior to booking the space.

Maximum eight students are allowed inside the Innovation/Maker Space zone at a time. The use of Innovation Zone/MakerSpace is limited for two hours per day per student, unless prior approval is obtained from the Librarian. Any electronic gadgets such as Raspberry Pi4 etc must be returned in the same working condition as they were issued. Students who attempts to delete or modify either hardware or software will be held liable for all damages. Theft will be considered as a serious offence and will result in a hefty fine and also permanent ban from the Innovation Zone/MakerSpace area.

Students must save their work on their external memory device. Once the project is over, it is the student's responsibility to delete any of their personal files from library computers in the Innovation Zone / MakerSpace. Any issues or accidents are to be immediately reported to a library staff member at the Help Desk in the Central Zone.

TIMINGS OF INNOVATION ZONE/ MAKERSPACE ZONE

9.00 am to 9.00 pm. Closed on Sundays and Holidays

xxiv) **Brainstorm and Group Discussion Rooms**

The library has on its 1st floor an Air-conditioned, spacious Brainstorm Room with a seating capacity for about 20 persons. This room can be used for academic discussions, deliberations, small seminars, brainstorming, Video screenings, Webinars etc.

Group Discussion Room has a capacity for about 6 persons. This room can be used for academic discussions, deliberations, meetings, brainstorming, Video screenings etc. The person booking these facilities is responsible for co-ordination of the event or activity happening in this room.

Please go through the rules and regulations on the library portal prior to using these facilities.

xxv) **Ideation Zone cum Multimedia Studio**

This facility can be used for Ideation, Teaching and Learning using multitouch smart white board. The Multimedia studio can be used for educational video making, editing, Image editing. Additionally, this facility can also be

used for conducting webinars, workshops, podcasting, etc.

Library preparedness post COVID-19

- Initially only 9am-5pm will be the library opening hours
- Students will be asked to return books only after one week of their return to the campus.
- We have identified a Quarantine Place for the books - in the lobby where low height shelves will be placed to stack the returned books. Users are expected to return the books using issue/return kiosk on their own and keep the books in the Quarantined place which is just behind the kiosk.
- The returned books will remain there for a minimum period of 24 hours and during that time they will be sanitized before taking them out for shelving.
- All users of the library are expected to wash their hands and use sanitizer before entering the library.
- If any user is sick/ not well then Security person will not allow them to enter the library not even for issue/return also.
- It will strictly monitored/ guided by the security staff.
- No user will enter the library without a mask
- Security guard will check the number of users already inside the library and allow only if stipulated seats available for the users.
- Sanitization of the Keyboard, Mouse will be done every time a student uses a computer. We will put up a notice accordingly near the E-Zones/ OPACs and will provide the necessary Sanitizers
- Users can bring their own water bottles instead of filling common RO water tap, or we will provide sanitizer bottle at RO water tap for users to sanitize their hands before touching the tap.
- Only two students are allowed to use one big long table with a minimum gap of one and a half meter distance between them.
- The trained staff members will regulate the movements of the students in the library.
- Students are not allowed to segregate or meet in a group in the library. The Group Discussion Room and Brainstorm Rooms will be used by strictly maintaining the distance stipulated.
- Emphasis will be given on QR Code for searching books and other documents.
- We have made an arrangement where users can request borrowing book on Koha-LMS OPAC. Library staff will keep the requested books at Help Desk-1 at lobby area. This is just avoid whole collection from direct contact to the users.

Central Workshop

The Central Workshop of the Institute has shifted to the 2600 sqm new building. The new workshop; in addition to imparting training to the students and catering to the maintenance and research needs of the Institute; is also designed for the 'design to test' concept. When fully functional, any student having an idea can design, prototype and test the part/product in the workshop. CNC machining, Reconfigurable Mini CNC machining, Foundry, Forming, Welding, Carpentry, Advanced Metrology, Learning Factory, Sustainable Manufacturing & Life Cycle Engineering are fully functional. Major equipment added during the year are: coordinate measuring machine (CMM), contour measuring system, vision measuring system, surface roundness tester, profile projector, microscope, micro hardness tester, 4 CNC turning and milling centres, 63 tonne power press, power tools, TIG & MIG welding and dynamometer. The workshop is equipped with state of the art metrology lab and dustless carpentry shop. Students' training consists of training all integrated first degree students through the course 'Workshop Practice' by imparting skills in various manufacturing processes. In addition, students are imparted training for other courses like 'Production Techniques', 'Metal Forming and Machining', 'Casting and Welding', 'Computer Aided Manufacturing', and 'Flexible Manufacturing Systems'. Apart from routine maintenance, fabrication and training, the workshop also accepts jobs on precision fabrication of project work of students, staff and research scholars.

Instrumentation

The instrumentation unit undertakes regular and annual maintenance of laboratory instruments across the Institute. Instrumentation provides an LCD projection facility for regular class-work in classrooms, workshops, conferences, symposiums, and other academic and cultural activities across the institute and also performs preventive maintenance for these projectors. The instrumentation unit facilitates all the institute programs with high-quality public address systems, digital mixers, loudspeakers, and Lighting equipment to make the events more effective and lively. The instrumentation unit takes care of digital TV installation and recharges in all the hostel's common rooms. The instrumentation unit provides mobile and a cellular connection to faculty and staff members. The instrumentation unit also provides an announcement system in MB Hostel and periodic bell system for classrooms and offices in the institute.

Reprography Services

The Reprography Section takes care of all the in-house printing, binding, and photocopying work (e.g. printing of institute bulletin, annual report, various information brochures, time table, academic regulation, answer booklets and project reports for submission to various Government and other funding agencies). The printing and binding sections have been fully equipped with facilities like off-set B/W printing, heavy-duty photocopier machines, cutting, laminating, stitching, spiral binding, etc. Reprography has a separate question paper printing/copying facility where the scripts related to assignments, tutorials, quizzes, test and comprehensive examination for all courses offered in on-campus or off-campus programs are printed. All the Institute dispatch requirements are catered through reprography either through ordinary/speed post facility available at the Vidya Vihar Post Office, Pilani or through private courier and cargo carriers for both domestic and international destinations as per needs. The document designing as per BITS brand guidelines such as designing of various advertisements related to admission and faculty recruitment, cover page designing of various institute reports, greeting cards and calendar designing, etc. are performed in this section.

Computing Facilities

The central computing facility of BITS Pilani referred to as the IPC (Information Processing Centre) hosts and manages the computing/ networking infrastructure for the campus. The infrastructure includes local and external connectivity including email as well as computer services. IPC operates early morning to midnight on 360 days a year. Some specialized labs/centers offer round the clock computing facility.

The campus hosts about 1000 latest desktops/workstations (including 350 in a central location), about a dozen compute-servers (Intel-based SMP Systems, IBM Blade servers with several blades), multi-Tera-byte storage (including a SAN) a variety of peripherals (printers/scanners/ plotters). The Center has a 16 node HPC cluster and 8 GPU servers with Nvidea tesla cards. These systems support heterogeneous operating environments (Linux and Windows), compilers, development tools/packages for students and staff. The computing infrastructure issues are resolved through online portal.

Campus-wide Computer Network

The campus hosts a state-of-the-art, completely switched, voice-enabled local area network. The network has more than 5000 wired data ports and provides connectivity to Instructional/ Administrative buildings, Hostels, Guest House, Library and Staff residences. More than 800 access points have been deployed across campus to support wi-fi based connectivity. The campus backbone is a 10Gbps fiber optic cable on a dual ring configuration. The external (Internet) connectivity is supported through 3 Gbps of leased line. The network support team maintains the network facility and resolves the issues through online portal.

CENTRES OF RESEARCH AND DEVELOPMENT

The Institute has established the following centres of Research and Development:

Centre for Software Development (CSD)

The Centre for Software Development *(CSD)* is responsible for the development and maintenance of University website, multimedia based content creation, maintenance of immersive Telepresence systems across all campuses, development of web based applications for providing various services to the user community (i.e. room booking, complaint management etc.) and maintenance of Open-source Moodle based learning management system. A team of students work on various research and development projects using latest technologies in the centre.

Centre for Education Technology (CET)

The Centre for Education Technology (CET) is responsible for identifying and deploying the new and upcoming technology to support instruction delivery. The centre manages the Telepresence facility based classroom which is used for running inter campus courses. It is involved in the Open-source Moodle LMS based *deployment for requirements of the Institute* in the form of the *Nalanda portal* on a regular basis. The centre also provides technical support for managing class room lecture recording system, deployed in four classrooms of Lecture Theater Complex (LTC). It is involved in the research, development and deployment specific to the next-generation Education Technology solutions.

Central Animal Facility (Pharmacy)

Central Animal Facility at BITS Pilani, Pilani campus is a CPCSEA approved facility with a total floor area of 5330 sq. ft. The facility is also approved for in-house breeding of small animals. The facility maintains the animal species like Rats, Mice, Guinea Pigs, Rabbits, and Hamsters. It was build up in accordance with guidelines issued by CPCSEA and other regulatory bodies. It is also equipped with an incinerator (electrically operated) facility for the disposal of biological and other biomedical waste. The air-conditioned facility is maintained by well-trained personnel, with a full-time veterinarian to take care of the various requirements of the animals. Central Animal Facility caters to the needs of the various research departments like Pharmacy, Biological Sciences, and Chemistry, etc. The facility also incorporates Pharmacokinetics, Pharmacodynamics, and Pharmacology research laboratory for carrying out advanced research in the areas of pre-clinical pharmacokinetics, bioavailability studies, pharmacological screening of various synthetic/natural origin drugs. The laboratory has sophisticated instruments such as two chambers automated organ bath, laser doppler, noninvasive blood pressure recorder, semi-dry transfer apparatus, microtome, RT-PCR, electroconvulsiometer, actophotometer, analgesiometer, light-dark apparatus, rotarod, etc. Equipment such as surgical anesthesia machine, electrical cautery, deep freezers (-20 and -80°C) and spare air-conditioners are also utilized. The laboratory is upgraded with a video documentation system for various animal behavioral studies and Individual Ventilated Cages (IVCs). The facility is geared to take up various industrial or governmental funded projects in various pre-clinical areas. Recently Air Handling Units and Large Scale Autoclave have been installed.

Centre For Innovation, Incubation and Entrepreneurship (CIIE), Center For Entrepreneurial Leadership (CEL)

ALL EVENTS IN 2021 (Jan 1 to June 30)

1. **Interactive session with Michael Seibel (CEO Y Combinator) and Dhruv (Shipbob founder)** (28th Jan): Michael and Dhruv covered the myths around starting startups, how to start up in university, and how YC helps you get started. Dhruv shared his YC experience and interacted with students to answer their questions.
2. **Decoding Entrepreneurship by Bhaskar Majumdar** (3rd April): Bhaskar is a native of IIT Kharagpur and an AMP from Harvard, and as a founder and the managing director of Unicorn India Ventures, he has invested in over 20 businesses with a combined Equity Value of $ 3 billion. He focused on “Everything starts from nothing” and what VCs look at in startups

3. **Building a High Impact startup in college by Shashwat Gangwal** (22nd March). Shashwat is a McKinsey alumnus and founder of InfinityBox - winner of $100K seed capital from the 2020 Hult Prize Accelerator. The session revolved about the journey of identifying problems, innovating solutions to these problems, and validating an idea for a venture.
4. **Cisco thingQbator online workshop** (10th Feb): Introduction to the program and push for young minds to identify and solve problems in its 4th cohort.
5. **Summer in a Startup (SiS)** (Jan-Jun): A platform to provide summer internships to students on campus in prominent startups across the country. CEL connected over 25 startups looking for student interns to BITS Pilani students.
6. **Rural Entrepreneurship Division (RED):** Discussed logistics for papad manufacturing, on hold till campus resumes offline.
7. **DSIR- PRISM** (Jan): BITS Pilani is an implementation institution for DSIR PRISM Scheme with TOCIC IIT Guwahati & SPMV, Tirupati. Promoting Innovations in Individuals Start-ups and MSME" (PRISM) is the erstwhile "Technopreneur Promotion Programme" (TePP). TePP is an initiative of Department of Science and Technology, Govt. of India to transform an individual innovator into a successful Technopreneur by promoting, supporting, funding untapped creativity of individual innovators."TePP" was launched by the Ministry of Science and Technology in 1998-99 and was jointly operated by the Department of Scientific and Industrial Research (DSIR) and Technology Information. BITSians applied with 14 proposals in category I and 18 proposals for category II of the scheme.
8. **Workshop on Scaling a startup** (17-18 April): CIIE BITS Pilani organized an online two-day workshop. The goal was to discuss the four major identified key factor associated with the scaling process of a business. The workshop experienced presence of experts like Mr. Mahesh Sastry, FlyNava Technologies, Mr. Vikrama Dhiman, Head of Product, Gojek. Mr. Anirvan Chowdhury, Blume Ventures, Prof. Arya Kumar and Mr.Krishna Veer Singh from Droom with 65 participants attendance.

Pilani Innovation and Entrepreneurship Development Society (PIEDS),

The incubation center works on the AI/ML based,E-commerce and market place,Robotics,micro satellite and GPS,Agri-tech,Chemical,Pharmaceutical and Biotech,Fin-tech,microfinance and access to finance, AR/VR,Mobility and electric vehicles, Health-Tech,Internet-of-Things, Industrial Automation and Social Startups and/Aligned to SDGs kinds of startups weather based on a product or service.

S.No	Activities
1	**Call for Proposals' April 21** Applications: 22 Selected for Incubation : 4 **Outcomes:** Total funds disbursed - **Rs. 25,00,000**
2	E-**Conclave: Sponsored by PIEDS for APOGEE 2021 (April,04 to April,05)** Participants:197 Keynote Speaker: Abhishek Humbad from Goodera **Outcomes:** Participation was received from startups all across the country, network sessions with VCs and panel discussion among various industry leaders were also organized.
3	**Agri Conclave (April,04)** Participants:13 Keynote: Ajay Chaturvedi,Founder-KFN & Harva **Outcomes:** Promoting innovation in Agriculture and its allied sectors.

Partners: HDFC Bank Ltd, Ministry of Electronics and Information Technology

Funding Partners	MeitY, HFDC Bank Ltd
Technology Partners	AWS, Zoho, Exotel
Incubation Partners	100x VC

Startup Glimpse

Name	Description	Website
Valerio Electric	Building affordable EV charging point for all parking lots	https://www. Valerioelectric .com
Nirogyan	Nirogyan makes medical reports so simple that people feel engaged and health-literate enough to change their lives through their test reports	https://nirogyan. com
Syzygy	Aiming to Eliminate Counterfeiting from your supply chain and solve a lack of Feedback infrastructure, making your Supply Chain Real-Time Demand and Data-Driven	http://syzygy.ml/ ?i=1
Adnue	ADNUE is a hyperlocal place based ad network that is built upon technologies like IOT and AI, which provides end-to-end advertising solutions.	https://adnue. com/

Notable achievements by startups incubated at the Incubator.

S.No.	Name	Awards and Recognition
1.	Syzygy	Winner IndiaTech Hongkong Hackathon 3.0

Teaching Learning Centre (TLC)

The fourth "Teaching Learning Centre" committee for Pilani Campus was formed in September of 2018 with Dr. Kaushar Vaidya as the head (more on TLC: https://www.bits-pilani.ac.in/tlc/Pilani/index.html). With 10 members from 10 various departments, three senior faculty members as mentors, a research consultant from IIT Kharagpur and a few student volunteers, the new committee started working towards strengthening the work of the previous committees as well introducing new ideas/concepts to facilitate a greater learning environment through stakeholders' participation in Pilani campus.

Centre for Robotics and Intelligent Systems

The objective of the Centre for Robotics and Intelligent Systems (CRIS) is to develop prototypes that provide greater intelligence and higher versatility for robotic tasks under ever-changing constraints of the environment. This objective is set forth to make Indian industry competitive by developing indigenous technical skills, manpower and innovative spirit. Each prototype is developed in four different stages viz. (i) Conceptualization, (ii) Algorithmic development and verification in simulated environment, (iii) Real-time testing and (iv) Integration of automated system. The Centre is well equipped with excellent computational facilities; advanced software packages for circuit design, image processing and mechanical design; micro controller and DSP based driver card for real-time experimentation; experimental bed, Pendubot (inverted pendulum), CRS-Plus robot manipulator, 4-DOF SCARA manipulator, 5-DOF articulated manipulator, 6-DOF ABB-1410 Industrial Robot, Hydra mobile base, Lab mate, mobile base, Allen Bradley PLC Micro Logix 1500,PLC based Hydraulic and Pneumatic Trainers and many other facilities.

The center is geared to provide research facilities in areas such as intelligent robotics and system design, intelligent control, neural and fuzzy neural based system modeling and control, evolutionary computation, robotic vision and virtual reality. Earlier BITSUMO, which is an autonomous assistant robot, was developed to work in restaurant/ library. In addition to these, an autonomous glider, an autonomous hovercraft, a 14-DOF robotic arm, an intelligent mechatronics ball, a micro-mouse platform and a micro-mouse testing base were developed at CRIS. The center is engaged with the development of humanoid robots. The first breakthrough is in terms of Acyut-1 and Acyut-2 (humanoid). Acyut-I is a dancing robot and which has won several laurels even at international competitive events (Rob games 2008 held at San Francisco, USA and INDEEN Expo, Germany etc.), Acyut-II is much larger and far more capable. It has far better control and using remote command by way of hand movements etc, it can be moved synchronously. These models were

demonstrated for their capabilities at Korea, USA, Germany and Japan. The students are currently working on further developments related to Acyut-2 robot with added features Acyut-III had participated in FIRA-2010, Bangalore and created a world record in weight lifting (2.4Kg.) in year 2010.

In same year a mobile Robot (named SHAURYA) participated in Annual student contest organized by DRDO, India and received recognition. Team Acyut have showcased their technologies at in the Tech fest of BITS Pilani Dubai campus and IIT Kanpur, Robotics symposium of RDE Pune (DRDO) and Tech test of NIT Calicut. For their effort the team has been appreciated by scientists of BARC Mumbai and DIT New Delhi. Acyut-IV had been invited to participate in ROBOCUP-2013. AcYut was redesigned completely and a novel system of parallel links is introduced. It stood 2nd in Robocup Iran Open 2013 and stood 4th in Robocup Netherlands 2013. Based on the progress in the area of humanoid robotics, Department of Information Technology (DIT) sponsored a project worth 45 Lacs in year 2013-2015, to develop a humanoid which is capable of stable walking and navigate in a structured environment.

The team has continually improved the software for the robot to incorporate artificial intelligence and computer vision. Acyut V can now play autonomous soccer against another robot and score goals. In February 2015 team AcYut demonstrated humanoid walking and image processing technology in HiSens Workshop at IIT Delhi. In July 2015 the team participated in RoboCup China in Teen Size humanoid league. Continuing the good work the team developed software modules with better algorithms for cognition. Other improvements include up gradation of the camera sensor to new Fish Eye lenses and implementation of feedback system for more stable gait. Team AcYut, BITS Pilani's humanoid robotics team, participated in the RoboCup 2017 held at Nagoya, Japan. Team AcYut had been the only participant from India. They participated in the Humanoid Soccer League and the Humanoid Soccer Drop-in league, where they finished fifth and third, respectively, out of a total of 8 teams.

In March 2018, a student team developed Buddy Bot for DRDO competition and became west zone topper. The team participated in the National Level finals competition and won a prize worth Rs. 60,000. Currently the same team is in the process of developing a driverless car with the developed technology and have achieved the autonomy level II so far and working for autonomy level III. The student team is known as Sally Robotics and has been engaged in research based innovations in the above area.

The research at CRIS involves all aspects of creating and controlling robots such as Mechanical design, Dynamics, Perception, Vision, Navigation, Control and Decision making. Current faculty research includes projects in the areas of Humanoid, Autonomous Car, and use of computer vision, motion planning and control, Machine learning Algorithms.

Embedded Controller Application Centre

This Centre was set up in Collaboration with Motorola India Ltd. The objective of the Centre is to impart detailed understanding of important features of embedded controller architectures and familiarization of advanced concepts in the field of embedded controllers through students projects/Industrial projects, Imparting training to the industry professionals and running short term courses in the field of Embedded System design, developing course modules. The infrastructure of the Centre includes High quality computing facilities, Microcontroller Modular Evaluation Systems, Microcontroller Development Systems, Emulators, Assemblers and Cross compilers for various microcontroller families (ARM, ATMEL, Microchip, Cypress, ST Microelectronics, etc.) DSP processors, logic analyzer and other bench equipments. We have received hardware and software license support under the ARM University program and Texas Instruments University Collaboration.

Centre for Renewable Energy and Environment Development (CREED)

CREED is an interdisciplinary Centre that co-ordinates educational and research activities in the active areas of renewable energy and environment. The objectives of the Centre are

(i) to conceive, develop and implement renewable energy applications and environment protection projects, (ii) to develop courses and organize awareness programmes, and (iii) to collaborate with external organizations in the areas of renewable energy education, training and technology development. Some of the existing facilities at CREED include an experimental set up for solar water heating, solar air-heating system, solar stills, and solar photovoltaic power pack with storage battery bank, SPV lighting systems, fluidized bed combustor with gasifier and various instruments related to energy audit and solar resource assessment.

Currently, active research areas of CREED include concentrated solar power and photovoltaic power based policy analysis, emissions and environmental impact of thermal power plants, planning and economics of renewable energy systems, real time operation and control of renewable systems, industrial cogeneration, integrated renewable systems, demand side management, clean development management integrated resource planning, CO_2 based refrigeration, biomass based fluidized bed combustion, biomass pyrolysis etc. The faculty members and research scholars of the center have also visited University of South Florida, USA and TU Braunschweig, Germany for the research purpose under institute's schemes.

The Renewable Energy Club is an exclusively a student managed body that operates under CREED. The Club has undertaken active work in organizing competitions, quizzes, carbon footprint analysis and carbon credits. Commercial organizations in these areas have evolved out of this club, and are currently owned and operated by BITS alumni.

Centre for Biotechnology (Department of Biological Sciences)

The Centre has in-house facilities of Genetic Engineering and Recombinant-DNA Technology. The objectives of the Centre are to take up research and development projects from various sponsoring organizations, establishments of University-Industry linkage through various R&D contract projects and conduct periodic Workshops and hands on training for faculty members, industry personnel and students in the area of advanced molecular biology/biotechnology and bioinformatics. Some of the key facilities available are Gel Documentation System, PCR Machines, Real Time PCR, Hybridization oven, Gel electrophoresis equipments, UV-Cross linker, HPLC, FPLC, Nanodrop Spectrophotometer, Vacuum concentrator, Temperature Controlled Water Bath Shaker, Refrigerated Centrifuge, Ultracentrifuge, Cell counter, Plant growth chamber, Fluorescent microscopes, Apotome Microscope, Gene Gun, ICP-OES, Cold Room, Tissue Culture Room, Plant Biotechnology facility, Semi-automated Green House, Radioisotope handling facilities, Victor-3 Multichannel counter, Inverted microscope with camera attachment, –80°C/-20°C Deep Freezers, Biological Safety Cabinets and CO_2/ Humidity Chambers. We have Insectory to facilitate research on mosquito-borne diseases, and a *Drosophila* lab for studying human genetic disorders. We have an active bioinformatics lab with advanced computational biology software and platforms.

Centre for Materials Science and Technology (Mechanical Engineering)

The objective of the Centre for Materials Science and Technology is to develop and implement projects related to modern materials such as smart materials, biomaterials, fibre-reinforced plastic composites and also related to conventional materials such as metals, ceramics and polymers. The Centre undertakes mechanical and non-destructive testing of various engineering materials and products for evaluating their mechanical properties and for evaluating defects such as cracks, voids, delamination, inclusions etc. Other activities include providing consultancy related to materials aspects and testing/development and analysis in the field of materials science and technology in general. The testing facilities available at the Centre include a conventional Universal Testing Machine of 50 Tons capacity, as well as, a fully computerized microprocessor based Electronic Universal Testing Machine of 100 kN capacity, Heating Chamber for UTM for High Temperature Testing, Hounsfield Tenso-meter, various hardness testing machines such

as Brinell, Rockwell, and Vickers Hardness Testers, Rotating Bending Fatigue Testing Machine, Combined Bending and Torsion Fatigue Testing Machine, Strain-gauge testing facility, Izod Impact Testing Machines, Digital impact testing machine, Double disk polisher, Inverted Metallurgy Microscope, Erichsen cupping tester, Circular and plane Polari-scope for photoelastic stress measurement, Single Screw Extruder with Calendering and Pelleti-zation Facilities, Ultrasonic Flaw Detectors, Liquid Penetrant Test kit, Magnetic Crack Detector, Eddy Current Tester, Acoustic Emission Testing equipment, Acoustoultrasonic pocket hand-held AU scanner etc. Wet-lab facility and fume hood for polymer fabrication section. Basic Mechanical fault simulator, Data acquisition system for vibration measurement, Tribometer.

Centre for Desert Development Technologies (CDDT)

Established with the financial support from BITS Alumni, C-DDT functions with the primary objective of developing world-class desert development technologies for making the desert bloom. It has joined hands with the Jacob Blustein Institute for Desert Research (BIDR) of Ben Gurion University, Negev, Israel to work in the area of desert development. The activities of the centre revolve around developing affordable and technically less esoteric technologies and integrating them with the existing practices of the desert areas of Rajasthan for economic upliftment, employment generation and poverty alleviation of the people of Rajasthan. Last four years research has been focused on the energy efficient houses. For the purpose four rooms were constructed with different architectural elements. Last two years three International papers are published in International reputed journals and two reputed International conferences and one Ph.D. scholar has completed her doctorate along with some first-degree projects at centre this year. Last year the solar house was integrated with rain water harvesting scheme and tank was covered, extended roof is fabricated to harness more rainwater and some roof tops were connected. This year ground is cleaned and leveled to apply contour irrigation system. Downward slope is made to flow the water in one direction.

BITS Astronomical Observatory (Physics): BITS Pilani houses an astronomical observatory that is equipped with two telescopes, a 6” refracting telescope, and an 11" Celestron's Schmidt-Cassegrain telescope which is completely computerized. The observatory has recently procured a CCD camera which can be used with the 11" telescope to obtain long-exposure, high quality images, of nebulae and star-clusters. The observatory is maintained by the Physics Department of the institute. A group of 20 students, known as, Astro Club, makes a regular use of the telescopes to observe celestial objects on a fortnightly basis. In addition, the club conducts regular astronomical observation sessions as well as workshops for general public, i.e. entire BITS community of students and staff, several times during a semester. Moreover, students registered in the elective course on Introduction to Astronomy and Astrophysics, offered by the physics department faculty, also make use of the observatory on a regular basis to augment their understanding of celestial objects.

Pilani Meteorological Observatory (Physics)

The Institute runs and maintains Pilani Meteorological Observatory on behalf of the Meteorological Department of the Government of India. Daily meteorological data regarding the weather at Pilani are recorded and transmitted by the observer, under the supervision of a professor in-charge, appointed by the Institute. The observatory has an automated weather station.

SPECIALISED LABORATORIES

Apart from the Centers described above, the following specialized laboratories have been established with a view to strengthen research and development in the respective areas:

(BITS Bio-Cyber Physical Systems Technology Innovation Hub Foundation (BITS BioCyTiH Foundation)

BITS Pilani has been selected, the only private institute, to establish a Technology Innovation Hub in the field of Bio-CPS with a funding of Rs.

125 cr for a period of 5 years. Realizing the importance of cyber physical systems (CPS) in the modern world, DST, GoI instituted the National Mission for Interdisciplinary Cyber Physical Systems to identify the technology needs of Ministries/Departments, develop solutions and provide technical support in CPS implementation.

BITS Pilani has formed a **Section 8** not-for-profit company (**BITS BioCyTiH Foundatio**n) to undertake the interdisciplinary research, innovation and technology development in the domain of Bio-CPS. The Hub will be bringing together experts across the fields of biology, electronics, chemistry, computer science, etc. The Hub shall be translating academic R&D into technologies for the industries such as health care, diagnostics, medical devices, wearables, biosensor, clean water, food safety and quality and monitoring, and other allied areas.

BITS BioCyTiH will focus on three main activities:

- **Research and development:** Idea, technology, knowledge and product development in Bio-CPS will be undertaken by the Bio-CPS TIH. It will also focus on developing prototypes and commercializing technologies in the areas of healthcare, agriculture, water and environment, thereby contributing to various sustainable development goals, national policies/ programmes and other development objectives. The Hub will contribute towards policy and standards development in the area of Bio-CPS. The Hub will also offer data as a service by creating data banks across strategic areas of focus.
- **Human resource development:** The TIH will create this future talent pipeline in the area of Bio-CPS through fellowships and skill training in the areas of healthcare technology, next generation sequencing, proteomics, metabolomics, MEMS, biosensors, Bio-CPS entrepreneurship, etc. The Hub will conduct skill development programmes for various target segments such as industry professionals, students, faculty, etc. Fellowship programmes (UG/ PG/ PhD) in Bio-CPS will be offered and supported by the TIH. Faculty Fellowships and Chair Professorships shall also be offered by the TIH.

Innovation and Entrepreneurship: The TIH will nurture startups in the area of Bio-CPS such as healthcare, agri-electronics, cognitive science, envirotech, IoT platforms, telemedicine, farm to fork, etc. through investing and handholding support. A Technology Business Incubator (TBI) shall be set up which will run various programs to nurture innovation across pre-incubation, incubation

Process Dynamics and Control Laboratory (Chemical Engineering)

Infrastructure includes Universal Process Control Trainer, Multiprocessor Trainer and Computer Control of process variables such as temperature, pressure, level, flow and pH in Chemical Engineering Processes

Environmental Engineering Laboratory (Chemical Engineering)

Infrastructure of this laboratory includes BOD Incubator Shaker, several gas and water pollutant sampling and analysis equipment such as air and water analysis kits, underground water sampling kit, pH meter , conductivity meter, Total Dissolved Solid, Salinity, Dissolved Oxygen meter, BOD incubator, Digital BOD analyzer, Digital COD apparatus, Temperature Controlled Shaker Bath, Laminar Hood Chamber, Orsat Apparatus, Refractometer, AutoClave, Fermenter, Distilled Water Setup, Peristaltic Pump, Compressor, Muffle Furnace, Calony Counter, Electronic Balance, Ion Meter, Fluoride Electrode, Hot Plate, Vertex Mixture, Deep Freezer, Oven, Hot Air Oven, Vacuum Oven, Remi Centrifuge, High Speed Centrifuge, Refrigerator. Data Logging Thermometer, 4-Channel Thermometer, etc.

Petroleum Engineering Laboratory (Chemical Engineering)

Infrastructure of this laboratory includes setups for ASTM Distillation, Flash point and fire point, Cloud point and pour point, Reid vapor pressure, Saybolt viscometer, Copper-strip corrosion, Conradson carbon residue, Redwood

viscometer-1 & 2, Engler viscometer, Penetrometer, Bomb calorimeter, Drop point of grease, Melting point apparatus, Smoke point apparatus, Gum content testing apparatus, Oxidation stability tester, Sulfur analyzer etc.

Research (Setup) Laboratory (Chemical Engineering)

Continuous Adsorption Set-up, Biofiltration Column Set-up, Downdraft Biomass Gasifier, Pyrolysis Unit, Reactive Distillation Setup, Air-Lift Bioreactor, CSTR Unit, Fluidized Bed Reactor, Fixed Bed Catalytic Reactor, Re-circulating Fluidized Bed Bench-scale Riser, Loop reactor, Particle Imaging Velocimetry, Flow Sense Camera, Isokinetic Tar sampling Setup, Digital Steam Rotameter, Ventury Scrubber, Sand Bed Filter, Glass Fiber Candle Filter, Fixed Bed Pyrolysis Unit, Fluidized bed Pyrolysis unit, Biomass Coke Stove, etc.

Analytical Laboratory (Chemical Engineering)

UV-VIS Spectrophotometer, pH/Ion Meter, Thermal Gravimetric analyser (TGA), High Performance Liquid Chromatograph (HPLC), Digital Scanning Calorimeter (DSC), Automatic Potentiometric Titrator with KF Attachment, Atomic Absorption Spectrophotometer (AAS), Gas Chromatograph (GC), Fourier Transform Infrared Spectrometer (FTIR), Flue Gas Analyser, Surface Area Analyser, Dynamic Foam Analyser, Multi Syringe Pump,Volumetric Analyser (VA), Cooling Micro Centrifuge, Rota Vapour, Digital Viscometer, Ultrasonic Cleaner, Auto Vacuum Desiccators, Ultrasonic Liquid Processor, HPLC Pump, Freeze Dryer (Lifolizer), Nan-contact Infrared Thermometer, Spin Coating Machine, DTG, Contact Angle Meter, Continuous Gas Chromatograph, Weighing Balance,CO_2 Analyser, etc.

Flexible Manufacturing Systems Laboratory (Central Workshop)

The Flexible Manufacturing Systems (FMS) Laboratory conducts hands on training to first degree & higher degree students and cutting edge research in manufacturing science. This laboratory is a center for carrying out practical experiments for various on campus courses such as Flexible Manufacturing Systems (EA C412/BITS F431), Computer Aided Manufacturing (ME F432), Production Techniques-II (ME F313), Metal Forming and Machining (MF 313), etc. This laboratory has been designed and configured to assist the Indian industry to become globally competitive in CNC manufacturing, CAD/CAM and machine tool sectors. The aim of the laboratory is to conduct fundamental as well as integrated research in order to achieve appropriate skill in CNC machining, in-depth knowledge in metal cutting, designing of manufacturing systems, developing manufacturing management techniques/strategies/practices for revitalization of Indian industries. The FMS lab aims to be foremost research center in CNC manufacturing, design of manufacturing systems and manufacturing excellence practices.

The following facilities are available in the FMS Lab.

- **Hardware:**
  - KODI-40 KLIEN Vertical Machining Center (Industrial)
  - Renishaw Probing System attached to KODI 40 VMC
  - Taylor Hobson Talysurf
  - FLIR Thermal Image System T250
  - MTAB STARRTURN CNC Lathe and Milling Trainer
  - MTAB FMS Cell
  - ROBOT
  - Rapid Prototyping Machines
    - ✓ Dimension Elite 3D Printer
    - ✓ FMD 200mc
  - IBM Intelli Workstations and High Computing Facility
- **Software Tools**
  - Umberto Life Cycle Assessment Tool
  - CATIA-PLM Tool
  - QUEST-3D Simulation Tool
  - ARENA-2D Simulation Tool
  - SIMUFACT Software
  - MINITAB-Quality Control Tool
  - DFMA-Product Design Tool

- LINDO/LINGO-Optimization Tool
- Multi-Attribute Decision Models

Oysters Lab-VLSI DESIGN Laboratory (EEE)
This laboratory has been established to support the Micro-electronics program and to carry out projects in the field of VLSI design. The facilities in the Lab, with a seating capacity of forty students, include the centralized IBM x3650 M4 servers, Sun Fire X2200, Ultra 20 with RHEL operating system and DELL Optiplex desktops as clients. The servers operate on High Availability platform with parallel computing and cluster configuration. The lab is equipped with the complete set of front-end and back-end EDA (Electronic Design Automation) tools from the top vendors including Cadence, Synopsys and Mentor Graphics for ASIC design, Symica custom IC design Tool kit, Altera for FPGA design, and Silvaco for device & process simulation.

The lab has collaboration with Europractice to obtain design kits for ASIC design including UMC 90 nm, 130nm, and 180nm, TSMC 180nm and 250nm and the Altera FPGA kits include 40 UP3 kits, 10 DSP development kits and 10 NIOS-II development kits. The lab also has a Mixed Signal Oscilloscope and a Function generator, from Tektronix, to test the fabricated chips

Instrumentation Technology and Virtual Instrumentation Laboratory (EEE): The facility in the laboratory includes general purpose and specialized bench equipment, transducers and signal conditioning kits, PC based data acquisition and control cards, Virtual Instrumentation software (LabView) and data acquisition & signal conditioning modules, ELVIS boards, Green Engineering, bioengineering kits, wireless sensor network kits, Programmable Logic Controllers with I/O modules and interfaces.

Optical Communication Laboratory (EEE)

The infrastructure in the laboratory includes facilities for study and characterization of optical waveguides, fibers, Optoelectronic sources and detectors. Facilities are available for fabrication and calibration of fiber optic sensors. Training kits to study, design and simulate fiber optic communication & network systems with additional computational facilities to characterize them.

IoT laboratory (EEE)

The Internet of Things (IoT) lab provides various equipment and facilities to conduct research and develop prototypes for IoT and several allied areas such as Security, Drones, Brain Computer Interface (BCI), 5G, Blockchain and Vehicular Ad Hoc Networks (VANETS). It also hosts laboratory activities for the related courses. Humanoid robots, BCI and FPGA kits, Quadcopters, FPGAs, and a variety of microcontrollers, sensors and actuators are available in this laboratory for research and development activities.

Advanced Structural Engineering Lab (Civil Engineering)

This lab has well-equipped testing facilities for structures and materials. The lab supports various equipment such as Loading frame with Servo-Hydraulic Actuator of 400 kN capacity, 100 kN Dynamic Universal Testing Machine, 1000 kN Static Universal Testing Machine, 1000 N Shake Table, Beam Torsion Testing Machine, Acid Resistance chamber, Digital Hot Air oven. These facilities are available to students, academicians, and researchers for their class and project work, and to outside agencies.

Structural Engineering Lab (Civil Engineering)

Portal Frame Apparatus, Redundant Joint Apparatus, Elastically Couple Beam Apparatus, Deflection of Truss Apparatus, Elastic Properties of Deflected Beam Apparatus, 3-Hinged Arch Apparatus, Column and Strut Apparatus, Unsymmetrical Bending Apparatus, Digital Switching Power Amplifier etc., etc. These facilities are available to students for their class and project work..

Highway/Transportation Engineering Laboratory (Civil Engineering)

The highway / transportation engineering laboratory is equipped with state-of-the-art devices that are used for the testing of pavement materials, conducting traffic engineering studies and to design safe flexible

and rigid pavements. The equipment housed in the laboratory includes, among others, Los Angeles Abrasion Testing Machine, Light Weight Deflectometer (LWD), Dynamic Cone Penetrometer (DCP), MERLIN, Bump Integrator, Portable Skid Resistance Tester, Centrifuge Extractor, Viscosity Bath Test Apparatus, Digital Ductility Testing Machine, Speed Radar Gun, Auto Exhaust Multi- gas Analyzer, Global Positioning System (GPS) units, Digital California Bearing Ratio Test Machine, and Marshall Stability Test Apparatus, Buoyancy Balance equipment. In addition, the laboratory also hosts several software packages that include VISSIM, ArcGIS, AutoCAD, MX Road, Trazer, Automatic Marshall compactor, Asphalt Mixer Density Meter, Two Handycams – Sony Make with tripods, etc. These facilities are available to students, academicians, and researchers for their class and project work, and to outside agencies for consulting work.

Survey Lab (Civil Engineering)

The survey lab is equipped with both basic and advanced instruments such as Total station, Digital Theodolite, Tacheometer, Prismatic compass, Auto Level, Tilting Level, DGPS Setup, Digital Planimeter, GPS etc., These instruments are predominantly used for the undergraduate lab work for the surveying course and also for project work for post-graduate students.

Soil Mechanics and Foundation Engineering Lab (Civil Engineering):

This lab has state-of-the art facilities for both teaching and research purpose and has wide range on instruments such as Digital Direct Shear Test Apparatus, Manual Direct Shear Test Apparatus, Triaxial Test Apparatus, Relative Density Test Apparatus, Unconfined Compressive Test Apparatus, Hot Air Oven, Consolidation Test Apparatus, Permeability Test Apparatus, Field Density Test Apparatus, IS Sieves, Hydrometer, CBR Test Apparatus, SPT Apparatus, Direct Shear APP. Large Motorised, DCPT Apparatus and Casagrande Apparatus, 4-Channel Digital Vibration Meter. These facilities are available to students, academicians, and researchers for their class and project work, and to outside agencies

Hydraulics Lab (Civil Engineering)

This lab has state-of-the art facilities for both teaching and research purpose and has wide range on instruments such as Stoke's Apparatus, Discharge Measuring Apparatus (V-Notch), Osborne Reynolds Apparatus, Hydraulic Jump Measuring Apparatus. Jet Impact Measurement Apparatus, Centrifugal Pump Francis Turbine Kaplan Turbine, Heleshaw Apparatus, Geophysical Resistivity Meter Electrical Resistance, Water Filter Chamber and Hydraulic machine, Metacentric Height Measurement Apparatus (Ship Model), Fixed Bed Flume, Multi-Purpose Flume, Tilting Flume Apparatus, Constant Head Apparatus, Varying Head Apparatus, Anemometer Viscometer.

Concrete Lab (Civil Engineering

The concrete lab has state-of-the art facilities for both teaching and research purpose and has wide range on instruments such as.Self Compacting Concrete Mixer, Slump Cone, Compression Testing Machine(2000kN), Compaction Factor Apparatus, Cement Tensile Testing Apparatus, Hobart Mixer, Cube Cutter, Flexural Strength Measuring Apparatus (Beam), 4-Point Loading Apparatus, Core Cutter, Vicat Apparatus, Vibrator Table, Vee Bee Test, Hot Air Oven**,** Muffle Furnace, Freeze-Thaw Chamber, Carbonation Chamber, Hydraulic Trolley (5000 kg capacity), Calorimeter, Motorized Sieve Shaker, Humidity Environmental Chamber, Concrete cube permeability apparatus, Cement autoclave, Automatic Blaine apparatus, Rebound hammer, concrete cube cutter apparatus, brick making machine, humidity chamber, environment chamber. These facilities are available to students, academicians, and researchers for their class and project work, and to outside agencies.

Environmental Engineering Lab (Civil Engineering):

The Environmental Engineering Lab has state-of-the art facilities for both teaching and research purpose and has wide range on

instruments such as.Orbital Shaker, Hot Air Oven, Deep Refrigerator, Vertical Autoclave, UV Spectrophotometer, Jar Test Apparatus, Incubator, Oxy Top Bottles, Nephlometer, COD Digester, DR Spectrophotometer, Digital DO/pH Meter, Centrifuge, Primary Clarifier/Setting tank apparatus, Rapid Sand Filtration Process Apparatus, Ambient Air Monitoring Kit For PM_{10}, PM_{25}, PM_1, So_x, O_3, NH_3, Digital Clinical Flame Photometer, Bomb Calorimeter, TOC_L, EPSILON 1 Academia, Benchtop, Fume Hood with special blower. These facilities are available to students, academicians, and researchers for their class and project work, and to outside agencies.

Computer Center and GIS (Civil Engineering)

The computer center and GIS Lab has state-of-the art facilities for both teaching and research purpose such as VISSIM, ArcGIS, ANSYS 14.5, CivilFEM, Abaqus 6.13, ETABS 2013, SAP2000 16, GEO5 15, AUTOCAD 2014, Lahey-fujitsu Fortran 7.5, RAM Concept V8i, STAAD Foundation Advance V8i, Structural Synchronizer V8i, MX V8i, Bentley Maps V8i, Bentley PowerCivil V8i,Projectwise V8i, STAAD Beava Module, Bentley Products, Pipe flow expert, ROLTA Geomatica suite, STAAD Pro V8i, STAAD Foundation V8i, DigitiZeIT, CIVILGEO ENGINEERING SOFTWARE, AMPL Software, Plaxis 3D, Microsoft Visual Studio License

Composite Lab (Civil Engineering): This lab is dedicated for research purpose, especially in the area of composites. Many equipments such as, Vacuum system for composites equipment, AE Win, Waveform equipment, Probe Sonicater are available for research purpose. Composite plates are being manufactured and tested in this lab for the research purpose.

Language Laboratory (HSS)

A language laboratory with 40 booths is functioning to conduct practice sessions pertaining to the various courses offered by the department and to provide adequate practice to the students in different communication skills in English. The computer assisted lab facilitates the teacher to instruct and take responses from students through a computer network. Students and faculty across the institute also use these labs for the self-practice and self-assessment of their language and communication skills. The lab has a good collection of audio visual teaching materials in the form of Audio/Video CDs, Audio cassettes and Learning software which are used to enhance the linguistic competence and interpersonal skills of the students. The Department has procured an advanced language lab software system named Orell Digital Language Lab (ODLL) which offers cutting edge software solutions and delivers language teaching – learning solutions integrating two – way communication and incognito individual student monitoring. The Lab also houses a 2D Classical Animation Desk for students to practice and do assignment for the course Mass Media Content and Design.

Creative Media Lab (HSS): The Department is equipped with a studio-cum-lab for meeting the requirements of asset of courses in the area of Media and Communication. It is primarily designed to support the course Short Film and Video Production. The lab is equipped with DSLR and video cameras, colour video monitor, Microphones, basic lighting equipment and other accessories. For editing films, the lab has acquired a Mac –Pro 2.4 GHz Quad –core Intel XEON.

Music Lab (HSS): The Music lab is used for offering the various courses, theoretical as well as practical, i.e.- Appreciation of Indian Music, Musicology-An Introduction, Indian Classical Music- (Instrumental-1) and Indian Classical Music (Instrumental-2), with different course plans of Indian and worldwide music, along with the musical practices and rehearsals for different institutional events taking place throughout the academic year. It houses various instruments like Tanpura, Tabla, Harmonium, Sitar, Guitar, Synthesizer, Violin, etc. for the class room practices for the practical courses and performances.

DUBAI CAMPUS AND ITS FACILITIES

Student Housing

The Campus has segregated, conveniently located, singly occupied, and air-conditioned hostel accommodation for more than 900 boys and girls, furnished to suit the student's requirement. Wifi Internet connectivity and provisions for maintaining a small fridge are also provided. The hostels provide a safe and secure learning environment to students. Hostels have televisions, microwave ovens, gymnasium, laundromat, first aid kits and recreation rooms with indoor games, magazines and newspapers

STUDENT ACTIVITIES

Cultural and Sports activities

The Campus provides facilities and services that encourage the personality development of every student in the social, cultural and interpersonal domains to produce self-reliant young professionals. Students organize various academic activities, social activities, and cultural and sports festivals. A variety of extracurricular activities such as drama, public speaking, debate, poetry and story writing, painting, sketching, singing, dancing, quizzing, gaming, digital art, face painting, rangoli, henna, photography, fashion show, activities on financial literacy etc. have become a regular feature of the Campus calendar. Students also participate and win several laurels in various inter university events organized by other universities.

Student Clubs

Student clubs formed around academics and themes add to the rich mosaics of student life. The list of clubs includes Dance Club, Music Club, Art Club, Photography Club, Drama Club, Public speaking and Literary Club, Design Club, Fashion Club, Social and Environment Club, Astronomy Club, Quiz club, Wall Street Club and Sports Club. These clubs enrich the social and cultural life on the campus by organizing number of inter and intra campus events. The Sports Club is committed to health and wellbeing of student community and encourages students and faculty to be involved in recreational sports through intramural, extramural competitions and tournaments.

Social Activities

The Social and Environment club organizes events with the sole aim of sensitizing students about their responsibility towards environment and community**.** Some of the activities taken up by the club includes awareness programme, blood donation camp, clean up drive, English classes for the support staff, recycling of paper, cans and tetra packs, fund raising events for charity, program for special needs children etc. Students are involved in making paper bags to replace the plastic bags used in the campus.

Student Professional Bodies

Dubai Campus has student branches of leading professional bodies and Department Technical associations such as IEEE, AIChE, ASHRAE, ASME, SAE, ACM, ACM-W, SKYLINE, CHIMERA, Linux Group, Microsoft Tech club, LINUX users' group and CIIE. Students actively engage themselves in the activities of these professional bodies and avail the opportunities provided by the professional bodies and their UAE chapters/sections. Department Technical Associations provide platforms for organizing co- curricular events at different levels.

IEEE

The IEEE Student Branch of Dubai Campus has been one of the largest IEEE student branches in UAE Section. It organizes competitions, invited lectures from eminent scholars and successful entrepreneurs for the benefit of students of all disciplines. IEEE Power Engineering Society has also been formed on the campus and is active. Students from the Campus also participate in IEEE Xtreme which is a 24 hour online International Programming Competition held every year. The IEEE Student Branch of Dubai Campus is one of the largest IEEE student branches in UAE Section.

AIChE

AIChE (American Institute of Chemical Engineers)- the students' chapter (started in 2013) at the department of Chemical Engineering, BITS Pilani, Dubai Campus is one of the first AIChE Student Chapters set up in the region. The students' chapter comprises a

subchapter active in organizing industrial field trips, interactive sessions with professionals, and workshops which equip our chemical engineering graduates with hands-on experiences to excel in their careers. Many technical and non-technical events are organized by the students every year. AIChE student chapter is also involved with networking, mentoring opportunities, and essential educational/career guidelines. Over the last several years, they have been interacting with students from AIChE chapters at the University of Utah and Brigham Young University, UC Berkeley, and Universidad Nacional de Colombia. The sole goal of the sister chapter program is to connect to future chemical engineers from around the globe. Over the last several years, our students have been selected at various leadership positions such as regional liaisons in AIChE executive student committee, and chair of the sister chapter subcommittee. In 2018, we were the first team from UAE to participate in the Chem-E-Car competition held in Bahrain.

ASHRAE

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) student branch fosters students interested in pursuing a career in the field of heating, ventilating, air conditioning, and refrigeration. Student Branch offers the opportunity to interact and "network" with members of the ASHRAE Chapter, to participate in technical tours, invite guest speakers, and to interact with other students with the same career interests.

ASME

Students participate in several District level and Global level competitions and brought laurels to the institute. The ASME Chapter of the Campus in association with the Pinnacle Knowledge Group held its first ever and the biggest Student Professional Development Conference (SPDC). SPDC is an initiative of ASME to enhance and develop the technical and leadership skills amongst the engineers worldwide. This Student section also organizes various student competitions every year in which many local universities participate.

SAE

SAE Student chapter is very active in participating in various competitions like FSAE BAJA SAE etc in USA / ITALY / INDIA. The students form into teams and register for these competitions, and they design, fabricate, and build the cars in college workshops and team Gear shifters also won many laurels in various competitions.

ACM

With over 100 enthusiastic student members the ACM is a vibrant and technology focused association. Founded on March 1, 2011, the association has grown from strength to strength over the past couple of years. The association regularly holds coding workshops, bootcamps, hackathons and invited talks. The idea being to introduce students to the latest technologies and for students to share their knowledge and upskill their fellow students. There are three Special Interest Groups for students with a focus in a specific area .ACM-CP, ACM-HEX and ACM AI for Competitive Programming, Security and AI. ACM BPDC was awarded the excellence award for outstanding chapter activities by ACM headquarters in New York in April 2020.

ACM-W

ACM-W BPDC is the women in tech chapter of ACM at BITS Pilani, Dubai Campus. Founded in 2019, it aims to inspire and lead women in tech by offering services and programs for professional and career development. In 2020, ACM-W continued to contribute to a community of women in tech, through webinars, hands-on sessions and social media. This year was met with challenges and obstacles because of the pandemic. However, ACM-W continued to progress through testing times. A number of Tech related activities, seminars, workshops and hackathons were conducted over the last two years.

LINUX Users Group

The Linux Users group was started in Oct. 2005. The registrations are free and open to all interested BPDC students. The group also provided resource material on UNIX Commands and Editor for first year students and Installation related assistance for UBUNTU OS for interested Project students. The group

conducted a short-term course on LINUX Concepts and Applications during 12th July 2020 – 25th July 2020, for ten school students of grade 12 in UAE.

CHIMERA

Chimera, BITS Dubai Biotechnology association, was inaugurated in 2010 with the hope of being more than just a college club for biotech students, rather it would act as a voice, providing the students with a platform to grow and learn. Chimera provides students with opportunities to participate in fun activities like Agar Painting, Crime Scene Investigation, Poster making Competition and many more. Guest lectures and talks are held by professionals in the field which keep students updated with recent discoveries and developments and provides them with industry exposure. It gives students the real feel of truly being a biotech engineer and gives students a chance to further enhance their knowledge and skills.

CIIE

The Center for Innovation, Incubation and Entrepreneurial (CIIE) [formally Centre for Entrepreneurial Leadership (CEL)] was established in 2012, to foster entrepreneurship among students and provide support to translate ideas into successful ventures. CIIE strives to create events and initiatives to bring together the young minds to “Ideate, Innovate and Implement”. CIIE is an initiative of Birla Institute of Technology and Science, Pilani established in all four campuses (Pilani, Hyderabad, Goa and Dubai) in alignment with BITS Pilani’s VISION 2020. The CEL was inaugurated on 8 September 2012 by Dr. Kumar Mangalam Birla, Chancellor in the presence of several dignitaries including Prof. B.N. Jain, the Vice Chancellor. Currently there are about 100 students enrolled as members with 12 students on its Executive Board. TiE Dubai is the Middle East chapter of TiE and was established in Dubai in 2003. The Dubai Campus and TiE Dubai have entered into a Memorandum of Understanding on 23 March 2013 to start TiE student chapter, in association with Dubai International Academic City (DIAC).

Microsoft Tech Club

Microsoft Tech Club is the tech club at BITS Pilani, Dubai Campus, associated with Microsoft Gulf, DIC. Is run by Microsoft Student Partners, and students of the Microsoft Student Community under the guidance of the faculty advisor. The club was established in 2009 and continues to be very active on our campus. Every year the club carries out training programs for students beginning from 1st year onwards in emerging technologies using the software tools supplied by Microsoft. Senior members of the club (MSP) used to undergo training at Microsoft Gulf in Dubai and they then teach the other members of the club about emerging technologies happening in Computer science with the support of Microsoft tools whose keys are shared free of cost from Microsoft. MSPS are involved in building apps, training others and social media. They are social, friendly students who enjoy creating global connections. They attend seminars, workshops and developer camps at the Microsoft Dubai office. Further, Evangelists from Microsoft used to visit and conduct workshops for the members of the club on cutting edge technologies delivered by Microsoft. The training offered by the club prepares the students to undergo PS-II program effectively where Microsoft software tools are widely used. Every year the tech club used to conduct various activities like Boot camps, Hackathons, Technical quiz, workshop, code Blitz ,coder of the year etc; During the current academic year the club has conducted 13 events virtually due to covid-19 restrictions.

SKYLINE

Student's led association SKYLINE of the Department of Civil Engineering was established in 2016 with the mission to educate and empower students for what lies beyond academics. SKYLINE students have membership in the American Society of Civil Engineers (ASCE) since the initiation of the association. Guest lectures and invited talks by eminent personnel from the construction industry and site visits to leading companies in the industry such as Shapoorji Pallonji LLC, Emirates Filigran LLC Precast Factory and organizing workshops that offer hands-on experiences on popular concepts such as GIS

and modern methods of surveying dominate the major activities of the association. Skyline conducted an event titled 'Constructo' at the institute's Technofest to focus on the gamification of concepts related to the structural design of bridges, soil and transport engineering to give students of all departments a taste of civil engineering.

FESTIVALS ON CAMPUS

Cultural and Sports Festivals

B-quizzed

B-quizzed, conducted at the Campus is the largest quizzing competition held in UAE where many universities and schools take part every year.

JASHN

JASHN is an annual intercollegiate cultural festival where universities from all over UAE participate in drama, dance, music, fashion, quizzing, art, literary, photography and many other competitions. Its mission is to mark the beginning of a new generation of cultural uprising in UAE, and give a platform to all those untapped sources of talent in the ocean of cultural ripples.

ARTEX

ARTEX is an annual intra College art, craft and photography event conducted by Shades –Art Club of BPDC, every year at the Campus. *It's main event is Kalakriti - an Art exhibition, a show case of various forms of art like Oil painting, Acrylic painting, Water Color painting , Poster Colour painting, Digital Art, Classroom art, Pencil Sketching, Oil pastels, Pen/ink art, Pencil color shading, Glass painting, Fabric painting, Embroidery, Pot designs, Best out of Waste (Junk Art) etc.* Art work entries by the students, Faculties and Staff of BPDC are put on display during Artex. *Competitions like Rangoli making, Face painting, Henna designing, Origami, Clay modelling, Beg-borrow-steal, Blind art, Doodle god etc are conducted for the students during Artex.Prizes and Certificates are given to the winners.* The club have been part of various College events such as Convocation, Technofest, Enginuity, Jashn, Diro's Tea Party, Dandiya Night, Holi Milan etc in joining hands for decoration/art work**.**

Sparks

Sparks is an annual cultural intra college event organized every year at BPDC. Various competitions in dance, drama and music are held. Competitions in Duet and Group Dancing are conducted in both Eastern and Western categories. For Music, Solo and Duet singing is conducted in both Eastern and Western categories along with Battle of Bands. Drama events like Histrionics, Ad making etc are popular events. The Fashion club, Allure members thrived to entertain the crowd and to teach those who are interested a sense of fashion and style. Two events were conducted by them one being Drape which was a fashion designer's show where participants brainstormed and came up with innovative designs to portray their ideology. Other event being Mr & Ms. Sparks. A large number of students participate in Sparks.

BSF

BITS Sports Festival (BSF) is the annual event in which the three Indian Campuses of BITS Pilani and more than 36 universities and colleges participate from all over UAE in the tournaments that include basketball, throwball, football, cricket, table tennis, chess, volleyball, athletics, archery, boxing, swimming and badminton. BITS Pilani, Dubai Campus was the first institution to introduce badminton, archery and boxing as an inter university sport event in UAE for both boys and girls. We were also the first university to introduce boxing as a sport at the inter-university level

BITS Sports Festivals were graced with the presence of sports stars like Diego Maradona,Virendra Sehwag, DJ Bravo, Pullella Gopichand, Sania Mirza, Sushil Kumar, Sania Nehwal, Madan Lal, Koneru Humpy, Vijender Singh and Piyush Chawla. The sports event witnesses crowds of around 4000 student, it is considered as the largest inter- University /college sports festival in the United Arab Emirates.

Technical Festivals

Technofest

Technofest is an annual intra-university technical festival. There are many interesting and innovative events organized by various

clubs and associations under Technofest. The various events include: Mechathlon, Float, Capture the Flag, Puzzled, Frynapse, Tech Fiesta, Debate, What is the good word, Business Quiz, Code Blitz, MindSpark, Big Split, Consumer Product, Pass the Buck, Rings of Fire, RC Football, Play2Code, TrashPanic and Hackathon. There are separate sessions for Paper Presentations and Exhibits for Working and Non-Working Models. The events help our university students to exhibit their skills and generate a lot of interest and enthusiasm among them.

ENGINuity

ENGINuity, the annual inter-university techno-managerial and innovation festival held at BITS Pilani, Dubai Campus, is one of the most prestigious platforms to showcase one's technical affinity. The word ENGINuity is a word play on the phrase "An Engineer's Ingenuity" and the event caters to this philosophy by encouraging innovation and creativity amongst its participants. Since its inception, ENGINuity has metamorphosed into an ideal melting pot of the country's synergic talent resonating with unmatched frequencies of fierce competition. It aims at forming a conglomerate of students who share a mutual passion for science, technology and management in a synthesis of enthusiasm and jubilation. The broad categories of events include: Technical, Business, and Literary. The various events under them are BQuizzed, Treasure Hunt, Code Blitz, Hackathon, Art Carnival, Gaming, Model Designing, Azure Workshop, Infographic, Talk on Sustainability and so on.

Students Participation in Institutional Activities

The campus has a Student Council, the office bearers of which are President, Vice President, General Secretary and an Ex-Officio. Other members of the Student Council include a hostel and day scholar representative from each year. Students are also part of many committees like senate, discipline, event management, corroboration and review, library, academic counseling board, etc.

STUDENT SERVICES

Orientation and Counselling

The Institute organises an orientation programme at the time of admission of freshmen, to familiarize them with various aspects of BITS, Pilani education system and academic system, infrastructural facilities, hostel facilities and various other policies and procedures at BITS Pilani, Dubai Campus. The Director and the Institute Officers of other units such as Academic Registration, Instruction, Practice School and Placement, Student Welfare, Library, Information Technology, etc., meet the parents of freshmen at an interactive session at the time of admission. Students also receive important information about the Student Services, Learning Resources, Financial Aid, Student Activities, Career Counselling, Academic Advising, and Industry Internship, etc.

Academic Advising

Academic Advising is carried out through the faculty members as academic advisors to students. The academic advisors interact with their advisees on a regular basis and discuss their performance and progress. Students are advised to contact the academic advisors periodically. The goal is to help the students reduce their program-related stress and maximize opportunities for academic performance improvements leading to a high quality professional life.

Student Counseling

A professional Counselor visits the campus every fortnight to foster well being on campus and to help students actualize both personal and career goals. The sessions are individual and confidential. The counselor interacts with students discussing all issues which affect their academic performance and help students in resolving their psychological issues, if any. Students are advised to contact the counselor directly. The goal is to help students reduce their stress, maximize academic and personal success, enhance personal development and quality of life. Students are also free to meet the faculty for counseling services and many students approach the faculty for the same.

Grievance Cell

The Students Grievances Cell (SGC) addresses the students' grievances, if any, and works to maintain the well-being of the student community in general. The SGC addresses the issues, investigates and recommends feasible solutions for resolving issues for the mutual benefit of the students and the Institution.

Earn-while-you-learn

Students can earn while learning under the earn-while-you-learn scheme. Students are given the opportunity to work as Professional Assistants in laboratories and/or assist the faculty and departments in other academic and professional tasks. They are paid an honorarium based on the work done and a certificate of appreciation is also provided.

Placement and Campus Interviews

The Campus offers a Placement Programme to all its graduating students. Reputed companies from UAE, Middle East Countries, India and multinationals participate in Campus placement. Some of the recent organizations that conducted campus placement are given in Table 1. Many graduating students prefer to go for higher education. The Campus also facilitates admissions to reputed Universities. A sample list of Universities where students have got admissions for Masters or Ph. D. is given in Table 2.

Table 1: Organizations participated in Campus Placement/conducted Campus Interviews	
HP, Dubai, UAE	Noon.Com, Dubai, UAE
Schindler, Dubai, UAE	Daikin Middle East, Dubai, UAE
Accenture, UAE	Petrochem, Dubai, UAE
IBM, Dubai, UAE	Bain & Company, India
PwC, Dubai, UAE	Publicis Sapient, India
Dubbizle (OLX Group), Dubai, UAE	Tetra PAK, Dubai, UAE
Redington, Dubai, UAE	Sharaf Group, Dubai, UAE
Emirates Group, Dubai, UAE	Beckers Group, Dubai, UAE
Careem (Uber), Dubai, UAE	Protiviti, Dubai, UAE
Zomato, Dubai, UAE	Air Liquide, Dubai, UAE
Landmark Group, Dubai, UAE	Takaful Emarat, Dubai, UAE
Talabat, Dubai, UAE	Delloitte, Dubai, UAE
ESAB, Dubai, UAE	IFFCO, Dubai, UAE
Reckitt Benckiser, Dubai, UAE	Nesto Group, Dubai, UAE
UAE Exchange, Dubai, UAE	Emirates NBD, Dubai, UAE
Schneider Electric, Dubai, UAE	Dabur International, Dubai, UAE
Aster DM Healthcare, Dubai, UAE	Sobha Group, Dubai, UAE
JLL MENA, Dubai, UAE	Lamprell, Sharjah, UAE

Table 2: List of Universities where students secured admissions for Masters or Ph. D	
Aalborg University, Denmark	Hong Kong University of Science and Technology, Hong Kong
Anna University, India	The University of Sydney, Australia
BITS Pilani Dubai Campus, UAE	The University of York, UK
Carnegie Mellon University, Pennsylvania, USA	University of California San Diego, USA
Collège De L'Estrie Inc., Qubec, Canada	University College Dublin, Ireland
Columbia University, NY, USA	University of Adelaide, Australia
Cornell University, NY, USA	University of Alberta, Canada
Coventry University, UK	University of Central Florida, USA
Duke University, North Carolina, USA	University of Glasgow, UK
Ecole Polytechnique, France	University of Groningen, Netherlands
Embry Riddle Aeronautical University, USA	University of Kent, UK
George Washington University, USA	University of Leeds, UK
Georgia Institute of Technology, USA	University of Maryland, USA
Heriot Watt University, UK	University of Michigan, Ann Arbor, USA
Illinois Institute of Technology, USA	University of New South Wales, Australia
Indian Institute of Management, India	University of Nottingham, UK
Indiana University–Purdue University, USA	University of Pennsylvania, USA
Johns Hopkins University, USA	University of Sheffield, UK
Karolinska institute, Sweden	University of Southern California, USA
Lamar University, USA	University of Toronto, Canada
Ludwig Maximilians Universität Munich, Germany	University of Washington, Seattle, USA
National University of Singapore, Singapore	University of Waterloo, Canada
NIT Surathkal, India	University of Windsor, UK
Northeastern University, Massachusetts, USA	University of Wrocław, Poland
Santa Clara University, USA	The University of Texas at Dallas, USA
Stevens Institute Of Technology, USA	Vision Concept Aviation Training Institute, Dubai, UAE
Symbiosis Institute of Business Management, Pune (Symbiosis International University), India	Western University, Canada
Technical University of Delft, Netherlands	Worcester Polytechnic Institute, USA

Alumni Relations

The BITS Pilani, Dubai Campus Alumni Cell fosters long term relationships among alumni through various programs. Its mission is to enable the alumni, students, faculty and friends to maintain their connectivity with the Institute and each other for shared benefit. The website is periodically updated to enable the alumni to have an access to the information. The Alumni Relations at the campus uses various platform to connect with the alumni such as emails, Linkedin, Instagram, Facebook and Almaconnect. The Alumni Relations team consisting of faculty and students actively engaged in maintaining the up-to-date information of the passed-out students as it provides a great strength to institution building and, engages with alumni for various events such as startup mentoring, organizing workshops and informative talks and social get-togethers.

The students team comprises of:

Post	Name/ ID no	Email
President	Ritik Panda (2018A7PS0102U)	f20180102@dubai.bits-pilani.ac.in
Vice President	Karthika S (2017A7PS0096U)	f20170096@dubai.bits-pilani.ac.in
Head- Campus Relations & Data Collection	Pranshu Goyanka (2018A4PS0164U)	f20180164@dubai.bits-pilani.ac.in
General Secretary & Head-Mentorship	Sanjam Chhatwal (2018A7PS0251U)	f20180251@dubai.bits-pilani.ac.in
Head - Fundraising	Roshni Dodhi (2017A7PS0275U)	f20170275@dubai.bits-pilani.ac.in
Head-Content Writing	Mardiyah Khadijah (2018A7PS0257U)	f20180257@dubai.bits-pilani.ac.in
Head-Event Management	Arushi Kansal (2017A7PS0293U)	f20170293@dubai.bits-pilani.ac.in

CENTRAL FACILITIES

Auditorium

The Campus has a large auditorium with a seating capacity of 1100. It has movable partitions to bifurcate the hall as per the requirements, acoustic paneling and carpeted floor and is equipped with five projectors with remote controlled screens, Bose speakers, a professional grade audio mixer and a carpeted wooden stage with stage focus lights.

Food Outlets

A canteen and a grocery shop are there for the students, staff and faculty. Vending machines are also available in the Campus and Hostels.

Sporting Facility

Campus has huge indoor and outdoor sports fields for games - Badminton, Carom, Table Tennis, Volley ball, Basket Ball, throw ball and Tennis. Athletic track was made to facilitate marathons, relays and races. One main turf cricket pitch and three turf net practicing pitches and two cemented net practicing pitches are available at the facility. The football and Cricket pitches are equipped with the flood lights for the day and night matches and events.

SECURITY

The complete campus and hostel is monitored through a CCTV system. Also round a clock security is available in the premises for the safety and the security of the students and property. Automated barrier system is introduced in the main gate to restrict the access of the outside vehicles to enter the premises.

HOSTEL FACILITIES

Mess

Hostels have independent mess facility with separate dining facility for boys and girls. Vegetarian and non-vegetarian food is being served in the hostel mess.

Laundry & Gym

For the ease of students, hostels have separate laundry and gym facility for boys and girls.

Library

BITS Pilani, Dubai Campus Library, a gateway to knowledge resources, is located in a separate building with two floors and total area of about 29,680 sq. ft.

The mission of the Library is to collect, organize, preserve and provide access to the information necessary for the institute, to achieve its educational, research and service goals and to enhance access to information in all forms, using innovative technology thereby having a broad-based collection, to assist in meeting the needs of students, faculty and staff.

Library has a contemporary design with reading halls, reference section, stacking area, faculty reading room, discussion room and digital library with 21 computers, internet browsing centre with 22 computers, 70 individual study carrels, and exclusive 8 (ground and first floors) systems to browse Library resources and online catalogue. Library has a seating capacity of more than 325 members. CCTV cameras are

installed. LED display panel for displaying information about library and its resources and services has been installed.

The Library operations are completely automated using the AUTOLIB Library Management Software and all the resources are bar-coded and RFID tagged for quick and easy service to the user community. The RFID security system has been implemented. Self Service Kiosk for issue and return of books has been installed. The Online Public Access Catalogue (OPAC) is web enabled which can be accessed from anywhere at any time. Users can search the resources and check their accounts. The Library renders standard services such as circulation, reference, referral services and reprographic services such as networked printing, photocopying, scanning and binding facilities.

At present, the library has a collection of around 23,270 books. The collection of the library is growing continuously on a regular basis. Around 326 new volumes of books are added to the existing collection in major disciplines of Engineering, Management and Sciences. The Library has a separate collection of Text Books under Book Bank Scheme for students to borrow. The Library procures a good number of general aptitude books such as TOEFL, GRE, SAT, IELTS, GATE etc. Fictions and books on Islam and Arabic are also added every year. Library procures latest editions of reference books and handbooks on core disciplines of Engineering, Technology, General Sciences, Management and General Knowledge.

The Library caters the users' needs with the collection of 4859 e-journals from the following e-databases: IEEE Xplore Digital Library, American Society of Mechanical Engineers (ASME) e-journals, Association of Computing Machinery (ACM) Digital Library, EBSCO Engineering source and JSTOR (Mathematics & Statistics, Life Sciences, Sustainability, Business & Economics, Arts & Sciences and Engineering). The e-databases have full text of e-journals with back issues, conference proceedings, e-books and reports. The Library has 1721 e-books from IEEE/MIT Press and IEEE-Wiley. The past year question papers of campus courses have been digitized and made available for students to access through the library web OPAC from anywhere at any time.

Library subscribes to UAE based 4 print newspapers. The Library has 862 back volumes of print journals. Library has 609 CD-ROMs on engineering courses. Library has more than 3249 practice school reports and project reports and 618 thesis submitted by students and PhD scholars.

The Library provides alert services of conference, competition for students, higher education scholarship and latest arrival service to the patrons and users. The Library also offers Inter Library Loan (ILL) facilities to the users. Library has Wi-Fi facility which enables the users to use their laptops for internet browsing / project / thesis work. The Library also provides the necessary training and information literacy sessions to users. The Library has an MOU with the Al Ain University of Science and Technology in UAE for the mutual benefit of both the institutions to facilitate the users to avail Inter Library Loan (ILL) of resources. The Library remains open from 7.30 AM to 10.00 PM on all working days and from 1.30 PM to 8.30 PM on Saturdays. The Library service is extended till Midnight during tests and comprehensive examinations. The Library is open on Fridays for 2 hours and closed on national holidays.

Library Resources and Services during Covid-19

- An e-Library portal provides a one-point search and access to all the subscribed e-databases (e-journals of IEEE, ACM, ASME, EBSCO Engineering, JSTOR, The MIT Press e-Books Library, Wiley-IEEE E-Books, BPDC Course Text/Reference Books and e-magazines and e-newspaper database Pressreader), BPDC Library catalog and selected open access e-resources. This brings convenience to the students to access the e-resources at anytime from anywhere.
- To ensure the safety precautions of library users from Covid-19 and renewed the confidence in library access, an Ultra-Violet (UV) Book sterilization machine has been procured for the Library and sterilized the

returned and used books before replacing the books on the shelves.

- To assure the safety of library users, “New Guidelines to use the Library, Resources and Services” has been followed and arranged the safety signages and reorganized the seating with reference to social distancing as per the Protocols given by Knowledge and Human Development Authority, Government of Dubai, Dubai.
- E-books of BPDC Course Text and Reference books have been procured and integrated in e-Library portal.
- 30 selective research e-journals have been subscribed from Springer, Sage, Elsevier, etc., and the same are made available in e-Library portal.
- The Library subscribed to PressReader which has access to over 7000 titles of e-newspapers and e-magazines from 120+ countries in 60+ languages.
- The Library staff team consistently organizes webinars, online training sessions, library virtual orientation and online literacy sessions on library resources for subject courses.

ICT Facilities

The Campus and the hostels are covered with the latest Cisco network Infrastructure of both wired and wireless hotspot environment which provides the internal and external connectivity to fulfill the computing needs of the students.

We have Cisco sponsored networking research lab equipped with the required network components such as routers, switches, firewall, wireless controllers and access points to build the network from the base level to high level of networking. This Cisco lab will lead the students to achieve the Cisco certifications and software defined Network projects.

Our data centre equipped with the following servers and Network components.

Servers

HP DL 380 series new generation

HP Storage serve (SAN)

QNAP NAS for Backup

Dell Blade Centre

Dell Rackmount RX740xD GPU Server

Network Components

Cisco Core switches Nexus series

Cisco Edge switches

Cisco Firewall

Cisco Prime system

Cisco Wireless controller

Cisco Network admission control and access control system

Cisco IP Telephony system

Panasonic IP camera setup

Ucopia Internet Hotspot Appliance

Sonicwall Unified Threat Management System

Most of our key critical applications are configured in Virtualized environment with load balancing and cluster mode. We have Business continuity and disaster recovery plan in place and we have a disaster recovery site is configured in different location to continue our operation in case of any unforeseen scenario. Periodic backup is scheduled by disk to disk method to backup the data as snapshots.

CISCO Telepresence Systems

Cisco Telepresense system (under BITS Connect 2.0 project) is implemented in the campus which is interconnected to all BITS’ campuses in India. The Cisco Telepresense classroom, capacity of 160 seating will help the students to participate in the online classroom sessions.

CISCO Telepresence Meeting Room:

The Telepresence Systems (Model: IX5200 – CISCO) is the 1st device of its kind in the entire CCG installed by CISCO in BITS Pilani, Dubai Campus. This model incorporates an elegant triple 4K Ultra High Definition camera cluster, three high-definition 70 inch LCD screens and theater quality audio to bring people together as if they were just across the table. Other meeting rooms are equipped with Model No.: EX-90 & SX-10 used for a smaller group members or individual can have one to one interaction across all the campuses. These technologies

make it possible for users to communicate as naturally as they would in person.

CISCO Telepresence Classroom: Is equipped with C90 system with 160 seating capacity used for inter campus meetings and lectures. The benefits of this technology will be easy to connect with management across all three campuses, offering more specialized electives to students, knowledge exchange between students from the other three campuses, helping students to attend guest lecture sessions from a remote locations, expediting the recruitment process.

E-Campus Solution: As an initiative and creative vision from the Director of BITS Pilani, Dubai Campus to make the Institute a smart campus, E-campus solution is adopted to achieve the Smart University environment. E-campus involves cashless transactions using a single card solution for all institute facilities. The faculty members, staff and students can access all the services and facilities in the University campus by using E-Campus smart card. It reduces the administrative overheads, automates the workflow efficiently for a complete university lifecycle of students.

Online Learning and evaluation platform:

Institute has adopted online platforms such as Impartus, Webex, googleMeet, Zoom, Google classroom and Microsoft Teams to continue the education and make the learning uninterrupted to the students during the pandemic situation. Online evaluation platforms such as CodeTantra, Socrative, googleclassroom, WebEx and googleMeet are being used for conducting examination. Lab and lab comprehensive examination are conducted by using the virtual labs such as Platify,Cisco webex hands on lab and physical labs by remote lab component.

Medical Facilities

We have appointed a Part time doctor and one nurse for our in-house clinic from Prime Medical Center. The nurse is available on the campus round the clock to provide first aid and emergency care. Vehicles are available for taking students to the hospital in case of emergency. Institute ensures that all students are vaccinated for chicken pox, flu or any other such contagious diseases. From time to time free medical camps are organized for faculty and staff.

Transport Facilities

We are providing air-conditioned buses from Famous Transport for the day scholar students. During this pandemic inside the buses the protocols are strictly being followed and around 156 day scholar students are using the transport facility. Arrangement made for the hostel students for their weekly City tour trip. We are providing complete free transport service for the Practice school students to their PS stations.

Sports Facilities

The Campus has sports facilities for boys and girls. The indoor Sports Complex consists of Badminton courts, Table Tennis, Boxing training room, Carom Board, Foosball and Gym. In addition, the outdoor games facilities consist of ground for Football, Turf Cricket ground, Basketball, Volleyball, Throw ball, Tennis and Handball courts. Separate gyms of international standards are there for girls and boys in the institute and in hostels. Four Cricket Turf practicing nets of sizes 20m x 3m are also there. Athletic track was made to facilitate marathons, relays and races. Grass football ground with flood lights was installed.

Central Workshop

The central workshop imparts training to the students in workshop practice course and caters to the needs of maintenance work of the campus. It also caters to the fabrication needs of students working on experimental setups and various projects. The workshop comprises of Machine shop, Welding, Smithy, Carpentry, Foundry, Tool room, Metrology, Sheet metal forming, CNC, tool crib and stores.

The major equipments include all geared lathes and shapers, surface grinding machine, universal milling machine, radial drilling machine, wood turning lathe, and smithy hearth furnace, AC & DC welding machines and Universal testing machine. In addition to these facilities, there is provision for sheet cutting & bending, wood planning, sawing, casting and heat treatment. The workshop has sophisticated machines like CNC Vertical Milling Machine, CNC Lathe, Plastic Injection

moulding machine, Optical microscope with Image analysis software, Microhardness tester, Potentiostat for corrosion testing, Servo hydraulic Fatigue testing machine, Ultrasonic Testing, Vacuum Hot press, TIG Welding, Tool dynamometer, Acoustic Emission tester and Surface roughness tester.

Laboratories

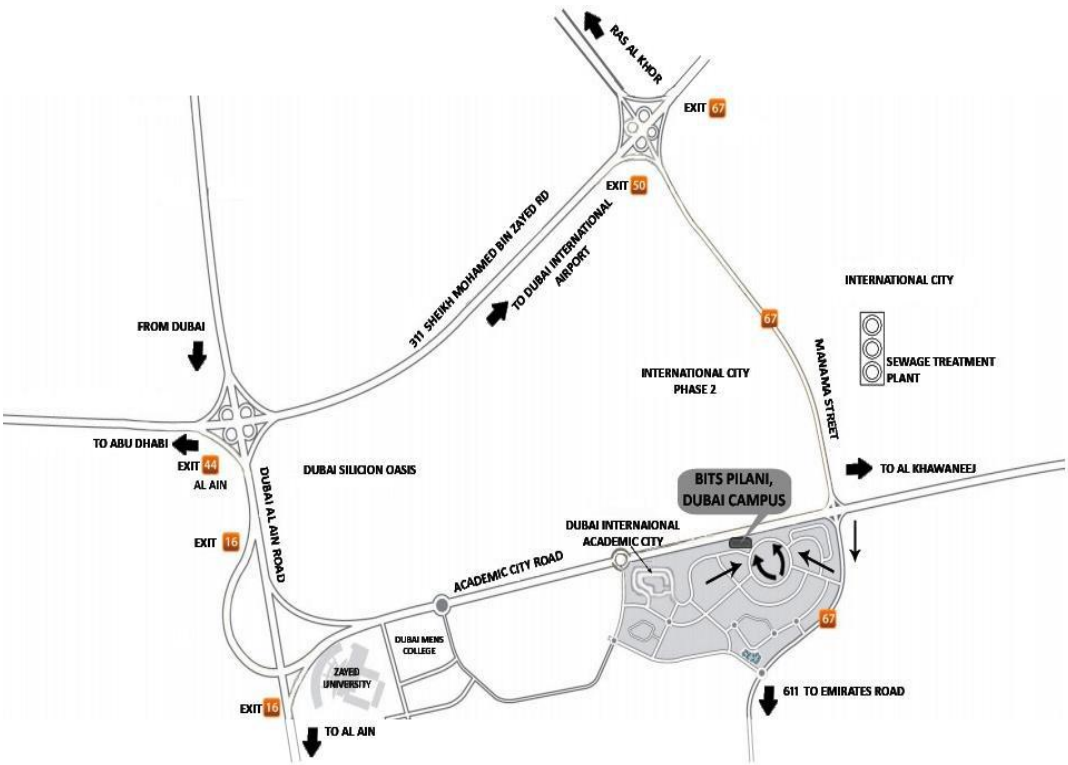
The Campus has well equipped engineering and sciences laboratories with latest instruments and software tools for students, faculty and research scholars. Viz., Chemistry Lab 1 & 2, Physics Lab, Patroleum Lab, Communication Systems Lab, Instrumentation & Process Control Lab, Power Electronics Lab, Signals & Simulation Lab, Analog/Digital Electronics Lab, Electricals Machine Lab, EG and CAD Lab, Composite Manufacturing Lab, Workshop, Fluid Mechanics Lab, Material Testing Lab, Heat Transfer Lab, Prime Movers & Fluid Machines Lab, Mechatronics & Automation Lab, Microbiology Lab, IMA Lab, Advanced Molecular Biology Lab, Microscopy and Imaging Facility, Cell Culture Facility, Microalgal Culture Lab, Biotechnology Research Lab, Computer Programming Lab, Software Systems Lab, Algorithm & Computational Engineering Lab, Networking & Multimedia Lab, Centre for Intelligent Computing, Microprocessor Lab, Concrete Lab

Soil Mechanics Lab, Transportation Lab, Surveying Lab and CAD Lab.

For more details, please visit:

http://universe.bits-pilani.ac.in/Dubai

ROUTE MAP BITS PILANI, DUBAI CAMPUS



K.K. BIRLA GOA CAMPUS AND ITS FACILITIES

The facilities available at BITS Pilani - K.K. Birla Goa campus include:

Student Housing

The institute is fully residential. There are separate hostels for boys and girls. First year they will be provided double-seated shared accommodation. Separate private room will be provided from second year onwards. There is a 'hostel attendant' stationed in each hostel.

Each room of the hostel is provided with modern furniture and Internet connectivity. Hostel common rooms are equipped with recreational facilities like Table Tennis, Carom & Chess along with LED TV with Dish connection, newspaper and telephones. Badminton court illuminated with solar lights inside the hostel lawn. Hostels are provided with Aqua guard purified drinking water facility with water coolers, and solar/electric geyser hot water for bathing. Each hostel is fitted with a CCTV camera and a security guard is posted for the security of students & hostel. The external housekeeping agency maintains the cleanliness of common areas of hostel & its surroundings daily.

There are three student dining to cater the food for the students which are run by outsourced mess contractors. There are three large sized Dining Halls with a seating capacity of 1200 students at a time. Each dining hall is well equipped with modern equipment and furniture.

Guest Accommodation

Excellent facilities are available for boarding and lodging on payment at Visitor's Guest House built in the southern corner of the campus. The guest house facilities include 11 AC rooms with modern amenities, a AC lounge, a AC dining hall and a level grass lawn.

Central Library

Spread over 3512 sqmts. area, the central library has a seating capacity of 550+ and includes several reading halls and a large area for book storage. It has a good collection of over 41,553 books on a wide range of subjects. The library subscribes to 57 print journals. Subscription to important digital libraries and databases like IEEE Xplore online, Science Direct, Scopus, ASME, ProQuest and ACM DL etc. provide full access to thousands of online journals to faculty, students and researchers.

Educational CDs, audio/video cassettes and question bank are also available. The textbook section keeps copies of all prescribed text books and reference books. A digital repository of resources curated from these as well as from the publications and dissertations of the Campus' faculty members and students is being built up.

A new initiative for making the Library a "Happening Place", taking a cue from the NAAC recommendations, is evolving through the leadership of the Library Committee. New comfortable and aesthetically pleasing furniture has been procured; spaces like lounge area and exhibition area and peripheral utility infrastructure have been developed to make the 'reading space library' experience more comfortable and enjoyable for the users.

The library has been provided with a wireless network whereby users can access the internet using laptops. The library transactions and search are managed using the (FLOSS) KOHA Library Management Software to automate its entire housekeeping activities. In this, the Campus is among leading campuses in the country. The bibliographic and holdings databases of books and e-journals can be accessed from anywhere in the campus through a Local Area Network. Indigenous projects are afoot to harness the same to a mobile phone-based social network

Computer Centre

Computer Centre (CC) has a central computing lab having 300 workstations (DELL & Lenovo) connected through LAN. These workstations operate under LINUX and Windows environments and support a variety of software tools such as C, C++, Java, Python, Microsoft

visual studio, MySQL, Xilinx, ModelSim, Adobe Photoshop, OpenCV, Pro-Engineer, ANSYS, COMSOL, Matlab, AutoDesk etc. CC supports all Departments for their software, hardware and storage requirements. CC provides computing and storage facilities for students, staffs and faculties of the Institute. Presently, with the existing facilities, the centre provides support for conducting online examinations in several courses including Computer Programming, Data Structure and Algorithms, Operating Systems, Computer Networks, Creative Multimedia, Computer Architecture, Database Systems, Engineering Graphics, Control Systems, etc. BITSAT, Admissions, students' elections and other online events are also conducted in the central computing lab. Apart from the computing facilities, CC supports a LAN of 4000 nodes with intranet and internet facilities in the academic block, hostel rooms, staff quarters, guest house and other places. There are two internet lines: 300 Mbps from GWave for hostel rooms, 250 Mbps from Vodafone for academic block and staff quarters. 50Mbps dedicated internet bandwidth is provided for WILP classes. 45Mbps MPLS line is provided for video conferencing applications in Telepresence rooms. Secured Wireless connectivity is provided in the Institute building, student hostels, student activity centre, visitor's guest house and medical centre. The centralized e-mail solution is supported by Google. This solution is an integrated solution covering e-mail with 30 GB space, file storage with 5 GB space, collaboration tool, file sharing, personal web pages, calendaring system, etc.

Voice Communication

All faculty members have been provided with a laptop and IP phone facility in their chambers. The IP phone facilitates receiving of incoming calls directly on the individual's telephone.

Video Communication

Multi-point video conferencing facility is made available using POLYCOM HDX machine. This facility is utilized for online meetings of research groups in India as well as across the world apart from the administrative meetings.

Virtual Class Room (BITS Connect 2.0)

Virtual classroom is set up at K K BIRLA Goa campus. This facility will enable faculty to deliver lectures to all four BITS campuses simultaneously; alumni and experts to remotely deliver lectures and conduct workshops or panel discussions to multiple BITS campuses simultaneously, with recording and streaming of lectures.

Telepresence Conferencing Room (BITS Connect 2.0)

An 18+16 seat CISCO Telepresence conference room allows impressive multipoint teleconferencing facility among all the BITS campuses.180 seat Telepresence classroom is provided for delivering and receiving interactive lectures between all the BITS campuses. These facilities are used for cross campus courses, guest lectures, administrative meetings and online meetings of research groups in India as well as across the world. Telepresence at K K BIRLA Goa campus facilitate virtual meetings for academic and administrative decisions at University level. Licenses for WebEx (web conferencing software) have been provided to all the faculty to facilitate discussions related to course work and research. This facility will also open up avenues of multimedia collaboration with anybody outside the campus

Bring your own device (BYOD)

As a part of an effort to make Computer Centre Lab enhancement, collaborative learning with students own personal digital devices on campus, bring your own device (BYOD) area has been designed in the Computer Centre Lab. It is created with the purpose of encouraging students to use technology to support their academic learning and research. Students are permitted to bring devices that can connect to campus Wired/Wi-Fi network for any accessible digital content.

Auditorium

A centrally air-conditioned auditorium with a seating capacity of 2200 is available for cultural activities, seminars, annual functions and other such activities.

Workshop

The workshop is spread over 24,800 sq.ft. area and is well equipped with metal cutting machine tools like lathes, milling machines, shapers, pedestal grinders, tool and cutter grinders, cylindrical grinder, drilling machines, etc. It also has machines like pipe bending machine, plastics processing using rotational moulding machine, Compression Moulding Press, Iron Worker, Muffle Furnace, Multi-Component Piezo Electric Cutting force Dynamometer etc.

There is a separate CNC machining section with production machines like CNC lathe, CNC Milling, Co-ordinate Measuring Machine and CNC Engraving Machine. These machines are based on FANUC controller. To introduce the concepts of layered manufacturing in product development, a 3-D printer or a Rapid Prototyping machine is also available.

An Electric Discharge Machine is used to introduce the students for un-conventional machining.

The carpentry section has the facilities of wood working lathes, planning machines and band saw machine.

A welding shop with the welding machines to facilitate arc, gas, TIG and MIG welding exists separately in the workshop.

The casting section includes an Aluminum melting furnace and casting testing laboratory to test the sand properties like strength, moisture, etc. A separate Metrology laboratory is also well equipped with measuring instruments like sine bar, dial gauge indicators, gauges, etc.

There exists an electroplating section where Ni and Zn plating is carried out on the workpieces produced.

Apart from the above facilities Central Workshop houses a well-equipped polymer and composite lab with equipment's like screw extruder, Density and Melt flow index tester, Dynamic Mechanical Analyzer (DMA), HDT& VSP tester, Universal testing machines for Polymeric materials (low capacity) as well as for metals and other materials (high capacity), Hydraulic Press for compression moulding, Izod Charpy impact tester, etc. An Injection Moulding Machine is being installed.

To test the formability of the sheets for metal forming an Ericcson's Cup testing equipment is housed.

The Non-destructive testing (NDT) equipment's like Ultrasonic Flaw Detector, Magnetic Particle Testing device is housed to introduce the concepts of NDT.

The KD2 Pro, a fully portable field and lab thermal properties analyzer is available. It uses the transient line heat source method to measure thermal conductivity, resistivity, diffusivity, and specific heat.

Pneumatic section with pneumatics and electro pneumatics set ups (Make Festo Controls) and a pick & place pneumatic manipulator is used to teach the concepts of Low Cost Automation using Pneumatics.

Acoustic Emission System

Cryogenic Treatment Equipment

Low Force Test System (UTM) (2KN)

Refrigerator/Heating Circulator

Tensile – Creep testing of Polymer & Rubber

Laboratories

The Institute provides labs equipped with sophisticated instruments and apparatus for students, faculty and research scholars. Some of these include: Nonlinear Optics Lab, Spintronics Lab, Semiconducting materials and Devices Lab, Nanomaterials and Optoelectronics Lab, Wet lab for material preparation, Central Physics lab for material characterization, Physics Teaching Labs are Mechanics, Electro Magnetism and Optics Modern Physics and Advanced Physics Lab., IMA Central Lab, Advanced Computing Lab, Materials Testing Lab, Measurement Techniques (Biology) Lab, Biotechnology Lab, Genetic Engineering Lab, Animal Cell & Tissue Culture Lab, Microbiology Lab, Applied & Environmental Biotechnology Lab, Advance Bio Lab, Cognitive Neuroscience Lab, Faecal Sludge Management Laboratory, Vector Biology Laboratory, Proteomics Lab, MT1 Chemistry Lab, Chemistry Project Lab [Also

known as Nano Material Lab], Chemistry Special Project Lab [Also known as Biosensor Lab], Chemistry lab -Research & Teaching Lab, Chemistry Lab II -Teaching Lab,

Analog and Digital Lab, Embedded Systems Lab, Digital Signal Processing Lab, Electric Machines Lab, Digital Communications Lab, Instrumentation Lab, Microelectronics Lab, Power Electronics Lab, Reconfigurable Computing Lab, Renewable Energy Lab, Weather Observatory, Network Embedded Systems Lab, Remote Embedded Lab, Labs of the Department of EEE are equipped with the following Major Facilities for higher education and research work: Anechoic Chamber, Vector Network Analyzer - Keysight, USA, Logic Analyzer - Tektronix, USA, Arbitrary Waveform Generator – Tabor Electronics, Israel, USRP (Universal Software Radio Peripheral) - National Instruments, IRNSS + GPS Receiver, Cadence EDA Tools, Mentor Graphics (HEP) EDA Tools, Synopsys EDA Tools & TCAD Tools and Xilinx Vivado System Edition Measurement Techniques Lab,

Robotics & Automation Lab, MEMS Design Center, Thermal Science Lab, Fluid Mechanics and Machines Lab, IC Engines Lab with Low Speed Wind Tunnel Facility, Dynamics& Vibration Lab, Polymer & Composite Lab, Material Science Lab, Material Testing Lab, Mechanical Engineering. Process Engineering Technology lab, Process Control lab, Phase Equilibrium lab, Computer Aided Design Lab, Separation Processes Lab, Selected Chemical Engineering Operation Lab, Gas Hydrate Lab, Material Synthesis Lab, Engineering Chemistry Lab, Scientific Computing Lab and Media Lab equipped with Two SLR Cameras – Canon 80 D and 1300D (with Lens Kit), Boom Microphone, Zoom Voice Recorder, Editing Suite, and Adobe Kit.

In addition to computer center facility, the Computer Science department has a data center and an additional lab with following facilities, for higher degree and research work.

In the data center, we have an HiPC Server (For University-wide Computation Service) with two master nodes from and nine compute nodes. The later have 200 CPUs in total. We have 128 TB of storage managed by a Dell server. The HiPC setup used MPI on IB backbone and ethernet connectivity. 650 MFLOPS tested nominal 1TFLOPS. There are two NVIDIA DGX servers for carrying out research in Artificial Intelligence. One DGX station is with eight NVIDIA® Tesla® V100 Tensor Core GPUs and 256 GB GPU memory. The another is with four NVIDIA® Tesla® V100 Tensor Core GPUs and 32 GB GPU memory. The stations are integrated with a fully-connected four-way NVIDIA NVLinkTM architecture. The additional lab has 150 state-of-the-art computers with the necessary software.

In the CS conference room, there is Senses 75-inch Interactive Intelligent Panel for Smart Presentations, Remote Teaching, and Teleconferencing. In the additional CS labs, we have Cloud computing facility, Monosek Network Analyzer, Pervasive devices for applications in wireless sensor device, FPGA Kits for Hardware reconfiguration, Multimedia Equipment, Real Time Operating Systems like VxWorks and QnX. The Scientific Computing Lab of the Department of Mathematics equipped with 24 Laptops, multimedia equipment, interacting projector, and the following software facilities for higher education and research work: MATLAB (Institute wide user's license), MATHEMATICA (30 user's license), Scilab (Free Open Source Software), FreeFem++ (Free Open Source Software) ,FEniCS (Free Open Source Software),Tora and Statistical Software R, SAGE.

Incubator

BITS BIRAC BioNEST incubation facility is set up with the objective of 'Enabling innovation in health care and environment for a better tomorrow.

The incubator has a state-of-the-art innovation lab for supporting experiments in Microbiology, Biotechnology and Environmental Engineering to develop technologies and startups that can provide solutions for societal challenges.

BITS BIRAC BioNEST was started as a part of BITS, Pilani K K Birla Goa Campus and is now under the aegis of an independent entity: BGIIES (BITS Goa Innovation, Incubation & Entrepreneurship Society). The Society was set

up in February 2020 and will help to grow incubation and the overall startup ecosystem.

The incubator is spread over 3500 sq. ft. of office and lab spaces, surrounded by beautiful green landscape; it has the capacity to support more than 20 startups. Currently supporting about 13 incubates; Resident and Associated in different areas like Medical devices, waste water management, agricultural waste management, grey water recycling, food tech, nutraceuticals and healthcare.

Networks and collaborations, legal, accounting and market research services, along with access to funding opportunities are provided to support the growth of incubated startups.

Students Activity Centre (SAC)

"Sound thoughts it's the philosophy that become based on and BITS Goa campus too swears with the aid of using it. Sports play a pivotal position in shaping one's character and preserving precise health. BITS Goa specifically advanced sports activities surroundings that suits global requirements and offers a honestly worldwide revel in to all our students. All the sports activities sports at BITS Goa campus are performed below the supervision of the SAC/SWD headed with the aid of using the Physical Education Officer. In addition to this, there's sports activities secretary from the scholar council. The foremost feature of the SAC is to sell sports activities culture, offer global magnificence sports activities helps for each day carrying sports, prepare sports activities in diverse sports activities disciplines and construct institute groups for the participation and Further pick out the first-rate amongst them for the National and different stage tournaments. SAC additionally organizes personnel sports activities occasions annually.

BITS Goa has various games facilities to its individuals with the chance to encounter sport either for relaxation and amusement or to a tip top cutthroat level utilizing best in class gear and a wide-scope of sports facilities.

Indoor Sports facilities

The Student Activity Center (SAC) of BITS Pilani Goa Campus is built in a space of 37,000 square feet with best in class sports facilities. It is outfitted with indoor games offices like wooden Badminton courts, Table Tennis lobby, Billiards room, and wooden Squash court with review display, Carom room, and a Dance room. It likewise has a music room with both eastern and western instruments, and furthermore a Prayer room. An advanced Gym fitness center, with every one of the most recent contraptions has been set up, it gives a wide assortment of wellness classes and fun exercises over time for the BITS people group.

Outdoor sports facilities

BITS Goa has a BCCI supported all around kept up cricket ground, cricket training net field cement and turf pitches, an AIFF endorsed football ground, standard volleyball courts with floodlight system, additionally worldwide standard all climate engineered tennis courts, 2 concrete and 2 synthetic Basketball courts, with LED flood lights. All our outdoor sports offices are available to understudies, staff and employees their children and the BITS graduated class. The Institute has investigated every possibility in urging understudies to partake in sports and sporting exercises.

Shopping Center & Bank

The Shopping center is a complex of shops including a supermarket, book store, stationery shop with printing and photocopying facility, vegetable and fruit shops, gent's saloon, ladies beauty parlor, laundry and tailor shop. There is a restaurant and a juice corner as well. The BITS Goa branch of State Bank of India is also in the complex for all banking requirements of the students and residents of the campus along with ATM. The ATM facility by HDFC bank is also in the Shopping center. All the shops have cashless transaction facility through credit/debit cards as well as money transaction apps.

Medical Centre

Medical Centre offers **primary medical care** as Out-patient Care, Emergency Room (ER) care, Specialty clinics, MPower - Rehabilitation & Counselling unit, Dental Clinic, Collection center for Laboratory service through dedicated medical & paramedical team. ER room is equipped with modern medical equipments / facilities like - Multi channel Cardiart 8108 R ECG recorder, Ambulatory BP recorder, Multi parameters monitors, Automatic Non-invasive

BP monitors (A&D Medical), Defibrillator, Nebulization machine, Infusion Pumps, Ultrasonic Therapy unit.

Specialty clinics are operational during week days in various specialties like *Orthopaedics* / *Paediatrics* / *Obstetrics & Gynaecology* / *Dermatology* / *ENT* / *Dentistry* / *Counselling* / *Physiotherapy*. These services can be utilized on prior appointment basis. In house Pharmacy is available. The institute is utilising tertiary care centres like Goa Medical College for the higher level of care in need.

Child Care Centre

The Institute runs a Child Care Centre to provide a safe, nurturing and creative environment where the children of faculty and staff can spend quality time while their parents are at work. The Centre runs a play school for kids in the age group of 2-4years in the morning and a Day Care in the afternoon for children who are more than 2 years old. Activities like sand play, water play, story time, celebration of festivals and special days and nature walks are carried out along with play-based learning activities. Children also learn creative art and craft activities. Day Care Centre is equipped with all necessary facilities such as toys, outdoor play equipment's, educational material and required infrastructure.

Parks

There are two parks available which provides greenery and space for the children to play. One of these is in the center of the residential complex and is equipped with outdoor play stations, swings, merry-go-rounds and benches, as well as a newly-setup outdoor gym facility for adults equipped with wide varieties of exercise equipment. The park is lit by solar lighting. Other smaller park is near the E-type quarters and is also equipped with swings and play stations.

Campus Placements

"The Placement Unit organizes campus placements, providing students in the final year with career opportunities for their first jobs. A large number of companies offering a variety of profiles in different sectors are contacted and hosted on campus during the recruitment cycle in both the semesters. Inviting the companies takes place for the University as a whole and is not Campus specific; however, the recruiting company chooses the campus they intend to visit. We also make use of the Cisco Tele-presence facility and the Ex 90 systems for inter-campus interviews i.e Any company visiting one of the Campuses can interview students from other Campuses using this facility" and thus students are given large number of opportunities.

The end to end placement processes is fully automated from sending invites to the companies till receiving feedback from the companies about the performance of the students. The feedback is shared to the respective departments on regular intervals.

Mentioned below is the list of companies that visited the Campus:

Sr#	Companies Visited / Recruited
1	Addverb
2	Aditya Birla
3	Adobe
4	Airmeet
5	AlphaGrep HW
6	Alphonso
7	Amazon
8	Amdocs
9	Analog Devices
10	Anand Group
11	Apple Inc
12	Arcesium
13	Arteria Technologies
14	Arup
15	Atlassian
16	ATOTECH
17	Atyati Technologies Pvt Ltd
18	Axxela Advisory Services LLP
19	BCN
20	Beehyv
21	Better.com
22	Bhanix Finance & Investment Limited

Sr#	Companies Visited / Recruited
23	BlueJeans
24	BNY Mellon
25	Boxfile
26	BrightChamps
27	Broadridge
28	Browser Stack
29	BuildWealth Technologies Private Limited
30	BUNDLE TECHNOLOGIES (SWIGGY LABS)
31	Byju's
32	CADENCE
33	Ceramorphic
34	CGI
35	Cirel Systems
36	Cisco Systems India Pvt. Ltd.
37	CITI BANK
38	Cloudwick Technologies
39	CodeNation
40	Cognizant
41	COLLEGEDUNIA
42	Confluent
43	Coupa Software
44	CRED
45	CYPRESS Semiconductors
46	Dalberg
47	Delhivery
48	Demand matrix
49	Deskera
50	Deutsche bank
51	Doubtnut
52	Draup
53	Dremio
54	e2OPEN
55	Eagleowl
56	ECOM EXPRESS
57	EdgeVerve

Sr#	Companies Visited / Recruited
58	Energy Exampler
59	Ernst & Young
60	Everwell Health Solutions
61	EXL
62	ExxonMobil
63	FICO
64	FIORANO
65	Flipkart
66	FRACTAL ANALYTICS
67	Futures First Info Services (PVT) Limited
68	GE
69	GenY Medium
70	Goldman Sachs
71	GoLorry
72	Google
73	GreyOrange
74	Growisto
75	HALLIBURTON
76	Head Digital Works
77	HelloThinkster
78	HSBC
79	IBM India
80	ICICI Lombard
81	Incedo
82	Indeed
83	Indus Insights
84	Infor
85	Innominds
86	InsuranceDekho
87	Intel
88	Intuit
89	IQVIA
90	Javis
91	Jio Platforms Limited
92	Jivox
93	JP Morgan CIB

Sr#	Companies Visited / Recruited
94	Jumbotail Technologies
95	Junglee Games
96	KFin Technologies
97	KPMG
98	Kustommade
99	L & T Infotech
100	L&T construction
101	Lemnisk
102	Lentra
103	Licious
104	lohia
105	Map My India
106	Maruti Suzuki
107	MathWorks
108	Media.net
109	Meesho
110	Mercedez Benz
111	Merilytics
112	Microchip Technology
113	Micron
114	Microsoft Corporation
115	Morning Star
116	MPHASIS
117	MPL
118	NETAPP
119	Netcore
120	Netcracker
121	Nomura
122	Novartis
123	Nutanix (Nutanix Technologies India Pvt Ltd)
124	nuture.farm
125	Nvidia (Nvidia Corporation)
126	NXP Semiconductors
127	O9 Solutions
128	Oracle

Sr#	Companies Visited / Recruited
129	Orbees
130	Park Plus
131	Paypal
132	PAYu
133	Pegasystems
134	PEPPERMINT
135	Petasense
136	PharmEasy
137	Platform9 Systems
138	Porter
139	Postman
140	ProcDNA
141	Publicis
142	Qualcomm
143	Quantiphi
144	Quantra (Pokarna)
145	qZense
146	Razorpay
147	REAL TIME DATA
148	Receivables Exchange of India Ltd. (RXIL)
149	RIVIGO
150	Saavn Media
151	SAP Labs India
152	Searce
153	SEDEMAC
154	ServiceNow
155	Signalchip Innovations
156	Silicon Labs
157	SLEEPIZ
158	Slice
159	Snapdeal
160	SONA COMSTAR
161	Superset
162	Target
163	TCS

Sr#	Companies Visited / Recruited
164	TCS Research & Innovation Labs
165	Techmojo
166	Tejas Networks
167	Tekion
168	Tektronix
169	TERADATA
170	Texas Instruments India Pvt. Ltd.
171	Thorogood
172	Tredence Analytics
173	Trell
174	Uber
175	Udaan
176	UNI
177	UnitedLex
178	Viacom18
179	VINCULUM
180	WABCO
181	WalmartLabs
182	Western Digital (WDC)- Sandisk
183	William O'Neil
184	Wipro
185	Xilinx
186	ZAGGLE
187	Zinnov
188	Zivame
189	Zluri
190	Zopsmart
191	ZS Associates
192	ZYnga Games

Practice School

While the practice school (PS) is a centralized activity for the university, the Practice School(PS) division coordinates the PS-I and PS-II activities for student of the campus. Apart from performing several functions required to conduct this centralized activity, on campus faculties are deputed by PSD for different PS-I stations across the country. These faculties mentor the students in PS-I activities along with the mentor from the industry. PSD also is involved in expansion of industry base that partner BITS in the practice school activities.

During SEM I and SEM II, 2020-21646 first degree students and 125 higher degree students undergone the PS-II program from the campus. During summer term 2020, a total of 866 students undergone PS-1 program in 310 stations from the campus**.**

Activities - Games and Sports

The Student Activity Centre (SAC) of BITS Pilani Goa Campus is constructed in an area of 37,000 square feet with state of the art sports facilities. BITS Goa has different games offices to its individuals with the chance to encounter sport either for relaxation and entertainment or to a first class serious level utilizing cutting edge gear and a wide-scope of sports offices. It is outfitted with indoor games offices of International standard like Table Tennis corridor, wooden badminton and squash courts. In open air sports the grounds has a BCCI endorsed very much kept up cricket ground, an AIFF supported football ground, standard volleyball courts, additionally global standard all climate manufactured tennis courts, engineered Basketball courts, with LED flood lights.

Every one of the games exercises at BITS Goa grounds are led under the oversight of the SAC/SWD headed by the Physical Education Officer. Furthermore, there is sports secretary from the understudy chamber. The principle capacity of the SAC is to advance games culture, give top notch sports works with to day by day brandishing exercises, arrange sports in different games trains and construct foundation groups for the cooperation and Further select the best among them for the National and other level competitions. SAC likewise arranges yearly games celebration of organization "SPREE". It is the greatest All India Inter-Collegiate Sports and Entertainment celebration of India, coordinated with the sole point of advancing games and social collaboration among schools from India and abroad.

Cultural and Recreational Activities

Students have cultural clubs to cater to interests such as photography, music, foreign languages, cinema, painting, arts, dance, literary, debate and drama to name a few. There are multiple technical clubs in the topics of Robotics, Aerodynamics, Block Chain, Astronomy, Auto-mobile building as well. Along with all the conventional sports club, BITS Goa also has one of the best Ultimate Frisbee Club in the country. All these clubs enrich the quality of campus life at Goa.

Students organize various inter-institute national festivals: "Waves" is the Annual Cultural Festival and "Quark" the Annual Technical Festival. An inter-institutional sports festival "Spree" draws enthusiastic participation from young sportspersons. Along the national festivals, students also organize inter-hostel festival called "Zephyr" for all students on campus.

Students also organize TEDx under which talented individuals from across the country and the globe are invited to present their innovative ideas.

Major Indian festivals such as Makar Sankranti, Lohri, Holi, Ganesh Chaturthi, Onam, Durga Puja, Diwali and Christmas are celebrated by the entire campus community.

Classical Music, Dance and performing arts have a strong presence supported by classes held on campus for students, staff and children. The student group "Srutilaya" organizes concerts and workshops by eminent artists.

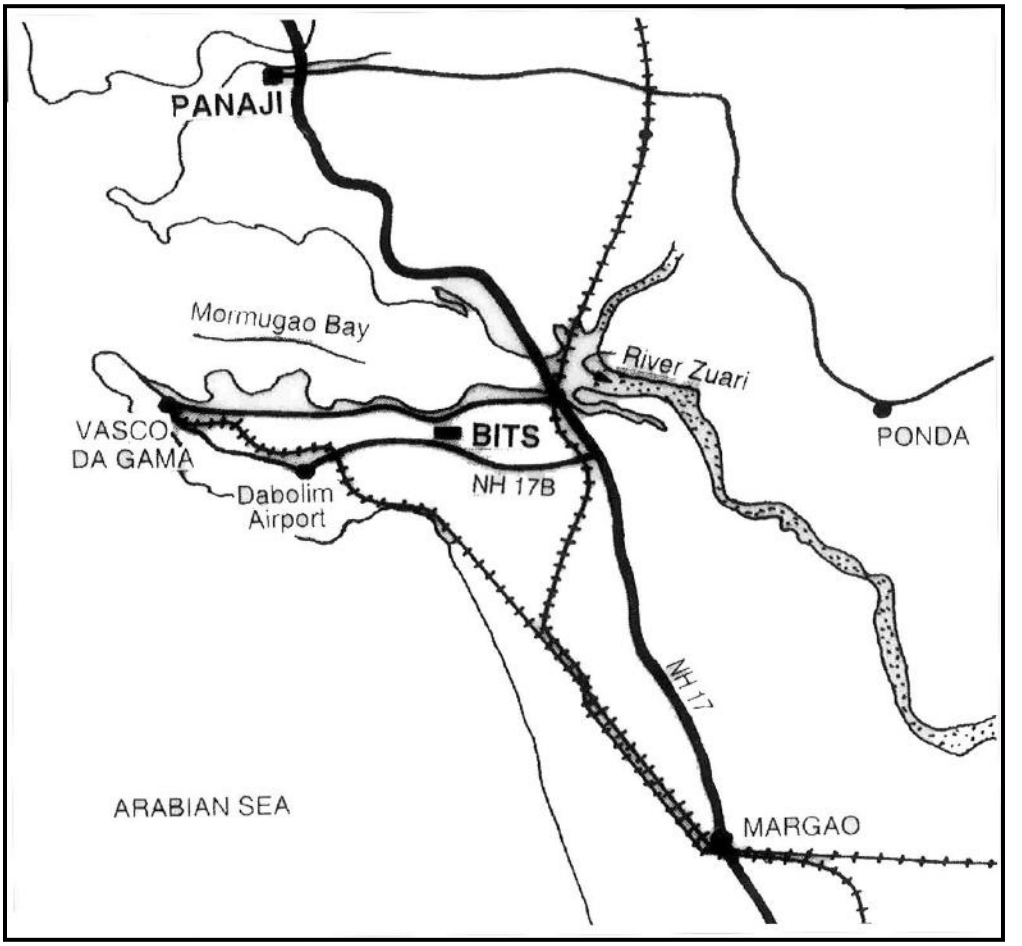
The campus Film Screen Club organizes screenings of latest release movies, as well as educational films with interactive sessions with the directors.

The Staff Cultural Association brings the staff members and their families together and organizes annual events such as SANGAM which is a cultural function, "Spoorti a sports event, and FunFair which involves participation from staff and their families. It also organizes annual event Sandhya Milan for senior citizens of Campus.

Environmental Awareness

Campus maintains lush green gardens with a rich collection of flora and fauna. Every year during the monsoon, tree plantation drives are conducted with the help of the students. Solar water heaters are provided at all hostels which accommodate 3500+ students. Around 40 standalone solar powered street lights are installed in the campus. Around 85% of the street lights in the campus are connected to off-grid solar power plant of 19 kW per day. These street lights function on solar power for about six to eight hours every night. Groundwater recharge points are created across the campus. In this, the surface runoff water during monsoon is directed to a designated area which then percolates in the ground resulting in groundwater recharge. All overhead tanks and water coolers are fitted with floats, sensors and other mechanisms to shut the water supply and avoid overflow. Domestic waste generated in the campus at residences, hostels, messes, etc. is segregated at source into dry, wet, electrical and medical waste. Wet waste is treated in a bio-gas plant and composter machine, with the capacity to treat one ton of waste each on daily basis. Dry waste is further segregated as per norms and handed over to GHMS approved vendor for recycling. All garden waste is composted and converted into manure which is used to maintain the garden. The Sewage Treatment Plant (STP), with the capacity of 600 cusecs is working round the clock to treat sewage generated by residents of the campus. The treated water is also recycled by using it to maintain lush green garden. The sludge generated at STP is transferred to drying bed in the vicinity of STP which is used as manure after drying. Environment Protection and Awareness Club (EPAC) by students also carries out activities such as Beach cleanup drive, campus clean up drive, snake awareness program and visits to animal shelters.

ROUTE TO BITS PILANI – K.K. BIRLA GOA CAMPUS



Institutional Address:

BITS Pilani – K.K. Birla Goa Campus

NH17 B, By-Pass Road

Zuari Nagar – 403 726, GOA

Phone: 0832 - 2580101

Home page: http://www.bits-goa.ac.in

HYDERABAD CAMPUS AND ITS FACILITIES

The campus houses the main academic building, hostels for boys and girls, Student Activity Centre (SAC), library, residential quarters for faculty and staff, medical centre, playgrounds and a shopping complex. The main building comprises of centrally air conditioned classrooms, Central library, Auditorium, laboratories, lecture theatres, faculty chambers and administrative offices.

Student Housing

BITS Pilani, Hyderabad Campus is a fully residential campus outside the bustle of the city, yet not far from the attractions of the city during weekends. BITS Hyderabad boasts **11 boys & 2 girls**' hostels accommodating both UG & PG students and provides 64 quarters for married research scholars. The campus provides spacious well ventilated **double/single** room Non AC accommodation to each student. Each room is provided with modern furniture, internet connectivity and round the clock security. Floor wise common room facilitates with cable TV, magazines, newspapers, Table Tennis, Chess and carom boards. Other recreational facility like volley ball is also available in each hostel QTs. Potable drinking water is available in each floor and telephones are provided in all the hostel offices.

The central dining facility is available for all the students. There are two independent large dining halls with modern and well equipped kitchens with RO plant for drinking water. A variety of food and beverage joints spread across the campus.

Computer Centre (CC):

The Computer Centre provides IT facilities and services to support students, faculty and staff for teaching, research, learning and administration. It facilitates and maintain the state-of-art networking and computational environment for the institute. The Computer Centre function as three operational sub-divisions- (i) CCIT (ii) CC Lab and (iii) Website maintenance.

The **CCIT** maintains the server room, which houses an IBM Blade Server-H with 14 Blade Chassis out of which 7 blades are populated and a 3 TB DS 3400 IBM SAN box is available on the network supporting Pentium based PCs and Workstations of Lenovo/HP/Dell make equipped with Windows and/or Linux environments supporting a variety of software tools.

The CCIT manages and maintains the campus-wide network which is built using Cisco three-tier architecture with wired and WiFi access to users. At present, the campus LAN is connected to 1.25 Gbps dedicated fiber leased line (taken from two different ISPs) for the Internet connectivity to the entire campus community, and one 2 Mbps PRI line for telephones at various offices within the campus. Provision is made to increase the total Internet bandwidth to 2.0 Gbps, if needed.

Recently, the SSL-VPN has been configured for accessing our network resources remotely and securely.

The ISP WAN (from different vendors) links are load balanced through a Radware Alteon load-balancer for better monitoring of WAN links, bandwidth allocation to different VLANs, and to provide application level QoS to users. Two Sophos XG550 UTM devices sit on the periphery of the network for authenticating users, performing web and spam filtering etc.

The CCIT is also responsible for creating and managing official e-mail IDs for all students, staff, departments and divisions, using Google's centralized e-mail solutions.

The CCIT also maintains the Voice over IP (VoIP) infrastructure and the Telepresence (TP) infrastructure in the campus. Using the TP facility, BITS Hyderabad campus establishes connectivity with three other BITS campuses to conduct conferences, meetings and online live lecture sessions.

The **Central Computing Laboratory (CC Lab)** facilitates the computational requirements for teaching and research in BITS Pilani Hyderabad campus. It manages eight computational laboratories for teaching and research. The CC-Labs facility with

approximately 500 PCs is accommodating integrated teaching with computational/ numerical tools. In the academic year 2019-20, CC Lab facilitated 50 courses from engineering and science departments, and the number may increase in the next academic year 2020-21. A dedicated research lab equipped with 50 desktops is serving the research needs of the faculty and students working on funded projects, dissertations as well as on design-oriented-projects. CC Lab maintains 30 network-based software/numerical tools, including the course-specific software and the general application software. The course-specific licenses include Design Tools- Auto CAD, FLEXSIM and PTC Creo, Numerical Computing Tools- MATLAB, MATHEMATICA and MATHCAD, Computational Fluid Dynamics (CFD) Tools- ANSYS CFD, Open Foam and COMSOL, Finite Element Method (FEM) analysis Tools- ABAQUS and ANSYS Mechanical, Civil Engineering Design Software- Bentley, and several other Statistical and Geographical Information System (GIS) tools. The CC Lab is also involved in the procurement and maintenance of computer-aided tools or software and the supporting hardware infrastructure for educational use. The vision of the CC Lab is to facilitate advanced computing facilities for faculty and students to enhance the teaching and research endeavors of the institute. To achieve its aim, the CC lab is constantly conducting training to staff/students that impart knowledge on basics and advancements in software/numerical tools. Further, the CC Lab help AUGSD and AGSRD divisions in online instruction and Admissions Division in conducting the BITSAT online entrance examination. The CC Lab also supports various departments and student associations in conducting workshops, conferences, and seminars.

The **Website maintenance** of the Computer Centre manages the website specific to Hyderabad Campus.

The **Central Workshop** imparts training to students and caters to the maintenance & fabrication needs of the Institute. Students' training involves training all first degree students through the course "Workshop Practice" by imparting skills in various manufacturing processes like machining, fitting, carpentry, smithy, foundry, sheet metal, electroplating, welding, etc. and two computer oriented exercises, CNC Programming using Pro-E and Master CAM software's and Manufacturing Simulation using FlexSim software. For B.E. (Mechanical Engineering) and B.E. (Manufacturing Engineering) degree courses, students are also imparted in-depth training in various other courses such as "Production Techniques-I and II", "Manufacturing Processes", "Casting and welding" and "Computer Aided Manufacturing". Apart from routine maintenance and training, the workshop also accepts fabrication jobs concerning the project works of students and also technical support for TBI works.

The workshop comprises the following sections: Machine shop, Welding, Electroplating, Fitting, Smithy, Sheet Metal, Carpentry, Foundry and Metrology. Major equipment's include Vertical Machining Center (Bridgeport VMC GX600), EDM Wire cut (Model: SPRINT CUT), CNC Lathe (Model PTC- 200), Hydraulic press with computer control(40T), nine Lathes, two Shapers, Radial Drilling Machine, Universal Milling Machine(Batlibai make) with indexing attachment, Cylindrical Grinding Machine with internal grinding attachment, Surface Grinding Machine, Tool and Cutter Grinder, Pedestal Grinder, Slotting Machine, Power Shearing Machine (Vivek Brand), Portable Drilling Machine, Injection Moulding Machine, TIG Welding Machine, MIG Welding Machine, Spot Welding Machine, Universal Milling Machine (BFW make), Shaper (Sagar make), Surface Roughness Tester (Mitutoyo make) and Hydraulic Bulge Test Rig, ECM setup (Electro Chemical Machining), Lathe Tool Dynamometer, and Rotational Moulding Machine, M TAB CNC Lathe Trainer, 3-D Coordinate Measuring Machine (CMM), HMT-PRAGA Universal Tool & Cutter Grinding Machine, FRITSCH Vibratory Sieve Shaker, Magnesium metal stir casting Furnace, Milling tool dynamometer, Drilling tool dynamometer, Lathe tool dynamometer, 200 TON capacity Compression testing machine, Mold Testing Equipment, Open-hearth furnace for smithy, Gas-fired furnace for foundry, Wood-working Lathes, Arc-welding equipment, Oxy-Acetylene gas welding equipment, Gauge planner for

wood works, Electroplating equipment (zinc coating), Power Hacksaw, Sand Muller (Capacity-75kg), Panther make lathe machines, Model: 1350/1, HMT make High Speed Precision Machine, Model: NH26/1500, and two 3D Printers, Lenovo make desktops and CIMCO CNC Simulation software (20 Licenses), MASTER CAM (15 Licenses), 1 Precision Micro Machining Center,1 FRITSCH Ball Mill (Planetary Micro Mill) equipment, 1 RETSCH Pellet Press, 1 NABERTHERM High temperature Furnace,1 Corrosion Setup (VERSASTAT3-500) and 1 BFW CNC Milling.

Medical Centre

A fully developed medical center with five doctors and five nurses has been established with all necessary facilities including 24x7 nurses and technical support. Recently new Dy. CMO, medical officer and a nurse have joined the team in the medical center. A consulting Gynecologist, pediatrician and a dentist visits the medical center every week. A number of new diagnostic tests including HB1AC and TSH have been included with procurement of new auto analyzer machine.

Shopping Complex & Bank

The Shopping complex (Connaught Place) comprises of Aggarwal Super Market, Gents Saloon, Beauty Parlor, Laundry, Medical Shop, Post Office, Book Shop, Stationery Shop with photocopying facilities, a Fruit and Vegetable Shop, and a bakery shop.

Laboratories

Advanced research laboratories for pharmacy, chemistry and biology have been setup. Research laboratories in Analytical, Organic, Inorganic and Physical Chemistry have been set up.

The department **of biological sciences** at BITS-Pilani Hyderabad Campus, despite being just twelve year-old, has attained success in almost all spheres of academia, in line with the aims and objectives of BITS-Pilani University. We have established a strong research culture, replete with sponsored funding, publications and patents in the designated thrust areas. The faculty are constantly striving towards enhancing the departmental research programmes through individual and collaborative contributions. Since inception, the department has been successfully running M.Sc., M.E. and Ph.D. programmes, making the department a preferred destination for several graduate and undergraduate students across the country. The department has several national fellowship holders from agencies such as CSIR, UGC, DBT at both Junior and Senior Research Fellow levels. We have also established startup companies, strong industry linkages and are presently working towards strengthening these and establishing more. The department has nine faculty members of which all Ph.D holders. The research thrust areas of the department are Medical biotechnology, Agriculture biotechnology, Food and Nutrition, Environment and bioenergy, Bio resources, Structural Biology and Bioinformatics, Technology development, Biophysics, Microbiology, Biochemistry and Molecular biology, Health Sciences and Public/ Global Health.

The department has several Inter-institutional collaborative projects both at the national and the international level. The national institutes that the department collaborates with Apollo hospitals, Bangalore; All India Institute of Medical Sciences, New Delhi, National Institute of Ayurveda, Jaipur; Ranbaxy Research Labs, New Delhi, India; SP College of Medicine, Bikaner, Rajasthan; Indian Institute of Science, Bangalore; LV Prasad Eye Institute, Hyderabad; Shankar Netralaya, Chennai, Tamil Nadu; Elite School of Optometry, Chennai, Tamil Nadu and Grasim Industries, Nagda. The International collaborations are with Baylor College of Medicine, USA; University of Pittsburgh, USA; University of Chicago at Illinois, USA; Mälardalens Högskola,

Swedish Council of Higher Education, Sustainable Innovations Inc, Virginia, USA; Equate Health, Silicon Valley, California, USA.

There are seventeen laboratories, which four laboratories i.e. Biology laboratory, Microbiology, Biotechnology and genetic engineering serve undergraduate and post graduate teaching activity. In addition, Animal Cell Technology, and Bioinformatics labs serve both teaching and research related activities. Department developed research laboratories, namely, Genomics, Stem Cell, Plant Biotechnology, Structural Biology, Environmental Biotechnology. In addition, to these, four labs have been developed to support research in the areas of Immunology, Infectious Diseases, RNA Biology, Cancer Biology, and Neurology. A specialized laboratory has been set up with financial support from DST-FIST laboratory, funded by the Department of Science and Technology housing equipment flow-cytometer, RT-PCR machine and Phosphor imager.

The sophisticated and high-end equipment that caters to both research and teaching purposes include BSL-2a and -2b laminar flow hoods, refrigerated orbital shakers, CO_2 incubators, FPLC, plant growth chambers, plant growth room, Inverted microscope, Nomarsky microscope, UV-vis spectrophotometers, multimode readers, advanced PCR machines, QRT-PCR machines, hybridization ovens, advanced table and floor top cooling centrifuges, ELISA reader, gel documentation system, Nanodrop spectrophotometer, fermenter, Lyophilizer, Millipore Unit, -80 Freezers, workstation and servers for computational work. Two more research laboratories with BSL 2 and BSL 3 facilities are being constructed. Also the Electrophysiology unit sanctioned from the DBT-Builder project will be housed in one of these laboratories.

The Central Analytical Labs (Central Analytical Lab 1 and new Central Analytical Lab 2) of BITS Pilani – Hyderabad Campus, known as CALabs are equipped with modern state of the art instruments useful for advanced teaching and research. These instruments cover various modes of elemental analysis, spectroscopy, separation, thermal studies and material characterization and imaging. The following list of equipment is established and functional for teaching and research purposes. List of important instruments is as follows: Powder XRD, single crystal XRD, FE-SEM, XPS, Laser scanning confocal microscope, Cell Sorter, 400 MHz NMR, AAS-7000, Flame photometry, XRF, BET surface area analyser, GC, HPLC (detectors: diode array UV, RI, fluorescence), LC-MS-MS, DSC-60, TGA-DTA, simultaneous TG-DSC, contact angle measurement, FPLC, spectrofluorometer FP-6300, UV-Vis-NIR spectrophotometer, FT-IR spectrometer, CD, Polarimeter, Karl-Fischer Titrator, Electrophoresis, Milli Q water, Impedance analyzer, Time-correlated single-photon counting spectrofluorometer, and Rheometer. In the FY 2020-21, a major equipment Small Angle X-ray Scattering (SAXS) has been procured and the installation of the same is in progress. In addition to serving the internal teaching and research purposes, CAL also extends its service support to the external institutions, TBI incubates and industries.

The Department of Chemistry offers M.Sc. and Ph. D. (Chemistry) courses where the students are systematically trained in well-equipped laboratories as a part of their practical courses. Individual students are given the scope to run the experiments on their own with the guidance of faculty members. The laboratory facilities include organic, inorganic, physical, analytical, spectroscopy, material science and computational chemistry laboratories. Recently we have established a new teaching lab for undergraduates and two research labs. Apart from that, they also take the courses on an instrumental method of analysis where all the students individually run various equipment such as IR, AAS, Fluorescence, GC-MS, X-ray diffraction, Raman spectroscopy, microwave oven and high-end UV-Vis spectrometer. The department has recently added a current source, plasma cleaner, two ice machines and solvent purification system to its existing infrastructure. The FE-SEM and NMR have started their functions at our Central Analytical

Laboratory. Both of these two pieces of equipment are the heart of chemistry-based research and teaching. The faculty members for the department are involved in various projects such as organic synthesis, material science, and computational, physical, inorganic and analytical chemistry.

The **department of Physics** offers M.Sc and PhD programmes in Physics. The faculty members of the department research in Astrophysics, Quantum optics, gravitational physics and black holes, high energy physics, Theoretical Physics, Computational Physics; Materials Physics; Bio-sensing, Microfluidics, and Pedagogy. The current existing research facilities include Scanning Tunneling Microscope, Atomic force microscope, Fluorescence Microscope, AC Impedance Analyzer, Dynamic Mechanical Analyzer, Faraday rotation measurement unit, thin-film deposition unit, and four-probe resistivity measurement unit; Soft-lithography based micro fabrication unit, Dell server for computation, COMSOL with microfluidics module for simulations, Igor Pro and Microcal Origin software for data analysis. M.Sc students are also familiarized with some of the research equipment through the "Advanced Physics Lab" course. Apart from this, the undergraduate lab has been bolstered with apparatus to measure the Zeeman Effect, Velocity of light, Frank-Hertz equipment etc. A computer interfaced telescope has been procured to provide hands-on experience to students on acquisition and analysis of astronomical data. The department hosts an IUCAA centre for Astronomy Research and Development (ICARD). Workshops and skywatch sessions are conducted for students under the aegis of this centre.

The **department of Pharmacy** offers B. Pharm, M. Pharm and Ph.D. courses where the students are trained in well-equipped laboratories for their practical exposure. The laboratory facilities include analytical instruments, equipment for pharmaceutical dosage form preparations, computer aided drug design lab, medicinal chemistry lab, pharmacology, molecular biology, BSL-3 and animal facilities. The department has recently added clean room facility for making formulations to its existing infrastructure. The faculty for the department are involved in various projects including development new lead molecules for TB, cancer, neuropathic pain; formulation development, Nano-delivery systems, transdermal delivery systems, natural product chemistry and pharmacological systems.

The **Civil Engineering** department has established following state-of-art laboratories and facilities, which can provide opportunities at various levels to students, academicians, researchers and to outside agencies for consulting works:

Structural Engineering Laboratory: The major test equipment/facilities are loading frame with 200 tons' capacity static compression testing facility, compression testing machine of 3000 KN capacity, Servo-hydraulic actuator (250 KN) for Dynamic Testing, Advanced dynamic testing shake table of size 2m×3m with 12 tons payload capacity (maximum displacement ± 75 mm, velocity 1 m/s, acceleration 3g, frequency 0 to 50 Hz), NI-9234 data acquisition system with LabView, Piezoelectric uniaxial accelerometers model PCB-393B04 (acceleration 5g, sensitivity 1000 mV/g, frequency 0.06 - 450 Hz), Impact hammer 5800B4 (500 LbF range, 10 mV/LbF, head weight 100 grams), Dytran Uni-Axial Accelerometer (500g range, 10 mV/g), Force Sensor 1053V4 (500 LbF range, 10 mV/LbF), APS 113 Long Stroke Shaker with m+p software based DAQ system, APS0112 Reaction mass assembly with vertical and horizontal table kit. Other equipment includes Structural analysis lab models, Wind tunnel, weighing balance of 300 kg capacity, and Hydraulic floor crane 2 tons' capacity

Concrete Technology Laboratory: The major equipment/facilities available in the lab are Servo Hydraulic Compression Testing Machine (2000 KN), Vibrating table, Vibrating machine, Sieve shaker, Cement/Mortar/Concrete Permeability Apparatus, Autoclave, Torsion testing Machine, Air Permeability Apparatus, Flexural Testing, Machine, Compressometer/ Extensometer, Rebound Hammer Test-NDT, Ultrasonic Pulse Velocity Tester, Dynamic Pull-Off Tester, Stereo Microscope and Strain Gauges of 120 ohms and 350 ohms capacity attached with Lab View Tester, Concrete mixer hand & motorized, Concrete cutter, flow table, .

Advanced Characterisation and Analysis of Materials Laboratory: The lab has Olympus Stereomicroscope, Laminar Air Flow chamber, Vibratory strain gage setup, length comparator, digital height gauge, dilatometer bench, muffle furnace, colorimeter, Rapid Chloride Ion Penetration Test setup, Orbital shaker, mini fridge, calorimeter,

Highway Material Testing Laboratory: Highway Material Testing Laboratory is equipped with equipment namely universal penetrometer, ring and ball softening point apparatus, advanced ductility and elastic recovery apparatus with both heating and cooling arrangements, pycnometers for specific gravity, closed cup pensky martin apparatus for flash and fire points of bitumen, Rolling thin film oven test, Brookfield Rotational Viscometer, Cannon Manning Vacuum Viscometer for absolute viscosity of bitumen (indigenous), Silverson High shear laboratory mixer, Ika Magnetic stirrer and heating plate, Hobart N50 Mixer, Ika Low shear Mixer, Jaw Crusher, Abrasion Testing Machine, Aggregate Impact Test setup, Aggregate Crushing Value test setup, Pycnometers and immersion basket methods of aggregate specific gravity test, Length gauge and thickness gauge for finding the shape of the aggregates, Modified Marshall apparatus with automatic compacting equipment and Indirect Tensile Strength test setup, Asphalt density Meter, Field CBR test setup, Modified Proctors density apparatus, Fifth Wheel Bump Integrator for measuring the roughness of pavement surface, Benkelman Beam for measuring the pavement rebound deflection, Merlene, Dynamic Cone Penetrometer, Soxhlet bitumen extractor, Hamburg Wheel Tracking Device (indigenous), Humidity Chamber, Straight edge, Camber Board, Cold plate hot plate thermal conductivity test setup, Cement autoclave, TRL Pendulum type pavement friction tester, Permeability test apparatus (indigenous), Centrifuge, Ovens of various sizes and capacities, 5Kva Generator, Core cutting machine Hilti Make, FRASS equipment, Asphalt Mixer, & Rice apparatus ,

Geotechnical Engineering Laboratory: The Geotechnical Engineering Laboratory has all basic and a majority of advanced instruments and set-ups to test properties of soil and rock. These include Universal Permeability Test set-up, Hot air ovens, CBR Manual & Motorized, Electronic Direct Shear apparatus Manual & Motorised, Large Shear Box apparatus, Electronic Tri-axial set-up, Brazilian Test Apparatus Unconfined Compressive Strength test set-up, Electronic Consolidometer, Linear and Volumetric Shrinkage measurement device, Swelling Pressure measurement apparatus, Model Plate Load Test set-up, Model Retaining Wall Test set-up, Rock Permeability Apparatus, Automatic Liquid limit Apparatus, Cone Penetrometer, Core drilling Machine, Soil Trimmer – CBR, Automatic Soil Compaction Machine and Relative density Apparatus, Cutting & Polishing machine , Sieve shaker, vacuum pump, weighing balances . The lab also has finite element software Plaxis 2D for modelling soil.

Environmental Engineering Laboratory: The lab has facilities to test most of the water quality parameters. The facilities include, Spectrophotometer – Single & Double, Thermo reactor, water bath, Jar test Apparatus, Portable water & Microbial testing kits, Hot Air Oven, Rocky Max Shaker, Multi parameter Sonde, Digital PH meter, Fluoride meter, Water level meter, Double Distillation Unit, Portable DO meter, Magnetic stirrers, weighing balance , Portable turbidity, conductivity & TDS meter , Fume Hood, Rain Gauge Equipment, BOD Incubator, BOD Analyzer , PM 2.5 and PM 10 dual dust sampler, Colony Counter , Fridge and Auto clave.

Geomatics Laboratory: The Geomatics lab has a majority of advanced instruments available for executing modern surveying techniques. The major surveying instruments available are Drone, Total stations, DGPS R4s & R3, Handheld GPS, Auto levels, Electronic Digital Theodolites Planimeter, Rodo meters & Dumpy levels along with conventional surveying instruments. The lab also has ArcGIS software for mapping and spatial analysis.

Traffic and Transportation Engineering Laboratory: This laboratory has a majority of advanced instruments and software related to traffic engineering and transportation planning. The major instruments available added to this laboratory are Speed Radar Gun, V-Box with Video camera, Noise-meter, Alcoholmeter, Lux meter, Safety manuals and Traffic signboards. The lab has the software such as N-Gene, M-Plus, NLogit software and has a traffic simulation software VISSIM.

Advanced Hydraulic Lab: This laboratory has a 2.5 m Flow channel and Wind Tunnel**.**

The Civil Engineering Department also has a **Centre for Excellence in Water Resources Management** (CEWRM), which has been initiated for innovation in sustainable research, education and training in water resources management and allied fields.

The **Department of Chemical Engineering** has Six undergraduate labs namely Selected Chemical Engineering Operations, Transport Phenomena, Chemical Reaction Engineering, Process Control lab, Environmental Engineering lab, Petroleum Engineering lab and. The department also houses Multiphase Systems lab, Advanced Separation processes lab, Instrumentation lab, Research lab, Material interfacial lab, Materials Science and Engineering lab and polymer engineering lab for the Master's program.

Selected Chemical Engineering Operations Lab: This lab caters the requirements of UG students and M.E/PhD students. Both semesters students will come to this lab to

perform CEL-1 and CEL-2 experiments, This lab is equipped with Super mass colloider which is a ultrafine grinding machine (MKCA6-2J) used to make nanoparticles or nanofibres using wet grinding, , Fluidized bed dryer used to dry the sand and other small sized grains, Granulator used for size enlargement using binder, Double Effect Evaporator, Water Cooling Tower, Rotary Drum Vacuum Filter used for continuous filtration (solid cake is removed continuously), Jaw crusher for size reduction (cm to mm), Centrifugal pump , Fluid Mixing Apparatus, Reciprocating pump, Plate-and-frame filter press used for batch filtration, Lab-Valley beater used for refining the pulp (size reduction) and crystallization equipments. Thermax Boiler used to generate steam (REVOMAX) of 200Kg/hr.

Transport Phenomena Lab: This lab houses the following apparatus required for understanding several phenomena related to Heat transfer, Mass transfer and Fluid mechanics, Bubble Cap Distillation Column, Absorption in wetted wall column, Sieve plate column, Liquid-Liquid extraction column, Vapour in air diffusion, Heat exchanger teaching set up, Natural and forced convection, Thermal conductivity solids and liquids, Fluid friction measurements and losses due to fitting, Venturi and orifice meters, Bernoulli's theorem apparatus etc. All the equipment is from K C Engineers, and is used by UG students in their course work and research purpose.

Chemical Reaction Engineering Lab: This lab seeks to introduce undergraduate and graduate students to Kinetics and Reaction engineering processes and their study. The principal objective of this lab is to train the students on the operation of different types of reactors (namely Batch reactors, Continuous stirred tank reactors (CSTRs), and Plug flow reactors (PFRs)). This laboratory has the following equipments- Five reactors of Mechtrix Engineers make and they are as follows: Batch Reactor, PFR, CSTR, CSTR followed by PFR in series and CSTR in series.

Process Control Lab: Process control is one of the most important concepts that is predominantly used in all chemical industries. We aim to impart the practical knowledge about various control concepts studied in the theory class via different control experiments. The lab is focused mainly for FD students where they have hands on experience related to level, temperature, pressure and pH control. Each of these experimental setups are connected to software, which further enable the students to understand the impact of each controller parameters on the desired control action. All of these experiments are based on the feedback control strategy. Details about the instruments in the lab is as follows: pH Process Control Rig, Level & Flow Process Control Rig, Temperature Process Control Rig, Pressure Process Control Rig, Make (Feedback Instruments Company).

Petroleum Engineering Lab: Petroleum Engineering Lab Provides Study and Analysis of Petroleum Products characteristics and its Properties. The facilities are mainly used by UG, HD and PhD students. The Laboratory is equipped with Red Wood Viscometer, Abels Flash Point Apparatus, Cloud & pour Point apparatus, Aniline Point Apparatus, Distillation apparatus, Bomb Calorimeter, from (Popular Science Apparatus). Reid Vapour Pressure Apparatus, Smoke Point Apparatus, and Carbon Residue Apparatus from (koehler instrument Company), High pressure Autoclave (PARR reactor, 350 OC, 140 Kg/cm2), and Fluid Cracking Reactor Unit.

Environmental Engineering Lab: The main function of the Environmental Engineering laboratory is to study systems that can be used for the control of air and water pollution. The various equipment and instruments hosted by this laboratory are as follows. Laminar Air Flow made by Bio-AIRCON which can be used to maintain sterile air flow. This provides an environment to prevent microbial contamination form air, BOD Incubator made by HMG INDIATemp. Range:5- 60^0C(for BOD estimation), Dust Sampler (APM 460 NL) made by EnviroTech Particle size:PM10 (to collect and analyze dust present in the work environment), Microscope made by Thermo Fisher Scientific (to observe the size and shape of biological and particulate matter). Reverse Osmosis based water purification system Test Rig: To Develop and test technologies that can be used to improve functioning of Reverse Osmosis based water purification systems (from micro to macro scale). Measurement

Techniques for Water Purification studies: pH meter made bySystronics, Colorimetermade by Systronics Wavelength,Conductivity meter made by Spectra Lab Range 0.2uS – 200 mS, Turbidity meter and water analysis kit made by Spectra Lab, are present to determine the water quality. The facilities are mainly used by UG, HD and PhD students for their research projects

Instrumentation Lab: The instrumentation lab contains state of art equipment to train all FD, HD and PhD students on characterization methods of gas chromatography (Micro GC, Liquid GC and additional columns), UV-vis Spectroscopy, Potentiostat & Galvanostat (Metro ohm, used to measure the Electrochemical energy conversion and storage), BET surface area analyzer, CO_2analyzer and Karl Fischer titrator (Moisture measurement in solids and liquids using chemical agents. In addition to these facilities, Instrumentation lab is also equipped with rotary evaporator, Distillation Analyser (Haage Estanit for analysis of liquid mineral oil hydrocarbons As per ASTM D86,D1078,D850 standard) Orbital Shaking Incubator REMI-CIS-24PLUS (Temp range 5- 60 deg C), Refrigerated Centrifuge), pH meter, Deep Freezer (400Litrs Up to -25 deg C), ultrasonic cleaner, probe sonicator, weighing balances, magnetic stirrers with hot plate, Digital Oil bath (6Litrs Up to 250 deg C)vacuum oven, cyclo mixer and refrigerated centrifuge for the synthesis of nanomaterials, fibers & polymers. Additional equipment such as Orbital Shaking Incubator, optical microscope, Moisture Analyzer (50 to 200 OC, Shimadzu MOC63U), Portable D.O Meter and HD students, PhD scholar and FD project students regularly use these equipment for their projects.

Polymer and Science Engineering Laboratory: Laboratory is equipped with the International Equipments make (Model LT-160) Digital izod&charpy impact tester & V notch cutter, The Izod test is most commonly used to evaluate the relative toughness or impact toughness of materials. Respectively. Noztek Extruder model Pro HT 600 (Temp.Range 600Deg.C), this can be used for mixing of polymers and making polymer blends and nanocomposites which can be processed further using techniques like 3D printing and injection molding. International Equipments make (Model IE-111) Melt Flow Index Tester (Temp.Range 420Deg.C) is used to measure the flow rate of different Polymers. Hand operated injection molding which can be used to make specimen for tensile testing as per ASTM D638 standards. Compression molding machine is used to make an object according shape of mold die polymer material. Muffle Furnace 7 L (Temp.Range1200 °C): Furnaces this means heat is applied to a chamber through induction or convection by a high-temperature heating coil inside an insulated material. All these equipment used for teaching of the undergraduate cours higher degree course CHE F243 and CHE G522 .In addition to these facilities the lab also has melting /boiling Point apparatus which can be used upto300^{o}C,fumehood, hot air oven 91 L(Temp.Range300°C),magnetic stirrer, shaking water bath.

Material & Interfacial Science Lab: This laboratory has some of the state of art facilities for measurement and modification of surface and interfacial properties of various materials. The facilities include UV / Ozone System (Nova Scan,PSDP- UV4), Contact angle and surface tension measuring system (Apex Instruments, ACM-NCS), Fume hood (L1500xD915xH2300mm), Hot air oven (100L Temp Range:300°C), etc.

Research Facilities. (Multi phase Systems lab, Advanced Separation processes lab, & Research lab): The Aim of these labs is to promote and develop basic and applied scientific research to support ongoing research Projects. These labs have the following facilities. Fixed bed reactor (Chemito, up to 1200 OC), Brookfield Rheometer (coaxial cylinder 0.026 to 8830 Pas) Temperature controller bath (RHC1000S-S1) refrigerating/ heating, -20 to 200 OC), Rotary Microtome (Leica, sections of 500 nm using tungsten carbide and diamond knife, automated), Humidity Chamber (40 to 80% RH, 10 OC - 60 OC), Rotary Pulp Digester (160 OC, 10 Kg/cm2), The department has recently added Paper and pulp technology equipments from the Global Engineering. Corp. Make. Consistency Determination Apparatus, Beating

& Freeness Tester - Canadian Type Pneumatic Model, Reflectometer, Densometer (Gurley Type), In addition to these Facilities Electro spinning Machine (Super-ES-2, nano scale fibres and core-shell fibres), Hot air oven (100L Temp Range: 300°C), Reverse Osmosis System (500LPH), Autoclave (Ambient to 140 degC),Tray Fermenter (Biomate India, BI-FERM-8D), Fixed bed Flow reactor Setup for CO2 adsorption study, TPD Analyser Apparatus, Are Avalible for HD students, PhD scholar and FD project students.

The **Department of Computer Science** and Information Systems has four physical lab spaces with a total seating capacity of around 200 students. The Department also has a virtual lab infrastructure which is remotely accessible by all faculty members as well as the students of the department on request.

Systems Lab (Academic Lab1)

The Systems Lab houses 56 desktop class machines with Intel Core i7 2.8 GHz 6C processors, 16 GB memory, and Nvidia Quadro K420 2GB GPUs. This lab is used to run the core Computer Science courses in the systems domain like Computer Architecture, Operating Systems and Computer Networks and higher degree core systems courses like Advanced Computer Architecture, Advanced Operating Systems, Network Security and Advanced Computer Networks. This lab also supports popular electives like Cryptography, Parallel Computing, Network Programming, Human Computer Interaction (HCI), Pervasive Computing etc. All machines in the lab run the Ubuntu Operating System and have Free/Libre and Open Source Software, like Wireshark, compilers like GCC and JDK, interpreters like Tcl/Tk, Perl 5.0, and gawk, installed on them for academic and research purposes. The lab is accessible 24x7 for the FD/HD students, the research scholars and the faculty, through biometric authentication modules. All the machines in the lab are interconnected through a high speed LAN and connected to the other network infrastructures of the dept. The lab is connected to the Internet through the campus network.

Data Science Lab (Academic Lab2)

The Data Science Lab currently has 84 desktop class machines with Intel Core i7 2.8 GHz 6C processors, 16GB memory and Nvidia Quadro K420 2GB GPUs. This lab is used to run the core Computer Science courses like Data Structures and Algorithms, Object Oriented Programming, Database Management Systems, and popular electives like Machine Learning, Data Mining, Artificial Intelligence and Foundations of Data Sciences. All machines in the lab run on the Ubuntu Operating System and have Free/Libre and Open Source Software like tensorflow, Cuda, Nodejs, Matplotlib, ffmpeg, OpenGL, installed on them for academic and research use. This lab is accessible 24x7 for the FD/HD students, the research scholars and the faculty, through biometric authentication modules. All machines in the lab are interconnected through a high speed LAN and connected to the other network infrastructures of the dept. The lab is connected to the Internet through the Campus Network.

Research Scholar Lab 1

This is a lab with dedicated workstations for the research scholars in the department. The lab has a total seating capacity of 25 and has cubicles equipped with HP Mini Towers with Intel Xeon E3-1225 V5 processors, 16 GB memory and Nvidia Quadro K420 2GB GPUs. Three cubicles have upgraded Nvidia Quadro K1200 4GB for GPUs for intensive computing and research requirements. All the workstations are equipped with Logitech 270 auto-focused web-cams and audio devices. Each research scholar is allocated a workstation and the scholars run Ubuntu Operating Systems with the scholars assigned privileges to install any Free/Libre Open Source Software to aid their research work. This lab is accessible 24x7 through biometric authentication modules.

Research Scholar Lab 2

This is the latest addition to the department lab physical infrastructure, with 20 dedicated workstations for the research scholars. Each workstation is powered by Dell OptiPlex 5080 Tower XCTO with Intel i7 (8-Core, 16MB Cache, 2.9GHz to 4.8GHz, 65W) processors, 16 GB memory, 256 GB NVMe class 35 SSD, 1 TB hard disk, and NVIDIA GeForce GT 730, 2GB GPUs. All the workstations are equipped with web cams and audio devices. One workstation each is allocated to each research scholar and they work on Ubuntu Operating Systems. The research scholars are free to install any Free/Libre Open Source Software to aid their research work. The lab is accessible 24x7 through biometric authentication modules.

Department Virtual Infrastructure

The department has setup a virtual infrastructure which is being extensively used during the online semesters to run the lab components of different courses. In addition, server support to run projects is also facilitated. The department has dedicated 2 HPE DL 380 Gen 10 Rack Servers with Intel Xeon Silver 4114 (Deca core) processor and 256 GB RAM for this purpose. The servers run Ubuntu operating system and are equipped to run any software tool for the lab components in any course. The servers are accessible from anywhere using ssh through a

dedicated port forwarding at the campus network gateway. All the students, the research scholars and the faculty in the department have accounts on the virtual infrastructure. In addition, the department has several rack servers on standby (1 HP rack server, 2 IBM rack servers, 1 IBM storage server) which can be commissioned into the virtual infrastructure as the demand rises. The virtual infra is housed in a dedicated server room with two server racks and two 8-port KVM switches.

In addition to meeting the lab requirements of the academics and research in the CSIS dept, the department receives requests for GPU access from other depts for their research purpose and such computing resources are as well provided.

The Mechanical Engineering Department has nine laboratories, catering to the undergraduate and postgraduate teaching and research activities of the department: Robotics and Mechatronics and Automation Laboratory, Materials Testing Laboratory, Product Design and Realization (PDR), Dynamics & Vibration Laboratory, Tribology Laboratory, Refrigeration Air-Conditioning & Energy (RACE) Laboratory, Heat Transfer Laboratory, Hydraulic Machines Laboratory and IC Engines Laboratory.

Robotics, Mechatronics and Automation (RAM) laboratory is presently equipped with facilities such as 5-axis industrial robot, NI-Myrio Kit, Multiple sets of Docile X mobile robot, Omni wheel robot loaded with sonars, LiDAR Steering Smart Car, ABB Articulated arm Robot with finger and vacuum gripper, Smart camera evaluation kit, Mechatronic workbenches, Industrial AC servo motor kit, PLC, Hydraulic and Pneumatic training kit, etc.

Material Testing Laboratory Material Testing Laboratory has the following important facilities: Universal testing machine (Zwick / Roell) consist of tension, compression, bending test facility from cryogenic temperatures to elevated temperatures (-100º C to 1200º C) for metal, composite and polymers, Pultrusion machine for composites processing, Rotating fatigue testing machine for metallic specimens, Creep and rupture testing machine under constant load condition, Torsion testing machine for circular metallic specimens. Other facilities include Polariscope, Polishing machine, Hot mounting machine, Digital density meter, Stereo and Inverted metallurgical microscopes (up to 500X magnification), Micro-Vickers and Brinell hardness testing, Charpy and Izod impact testing, Muffle furnace (1200º C) and Vacuum Oven.

PDR (Product Design & Realization) laboratory is equipped with Rank-Taylor-Hobson computerized profilometer, additive manufacturing machine (rapid prototyping), David SL2 & 3D scanner, milling dynamometer and etching machines along with the softwares like ABAQUS, DEFORM-3D, LS-DYNA, and Design-Expert.

Dynamics and Vibration laboratory has miniature shakers, uniaxial and triaxial accelerometers, universal vibration apparatus, whirling of shaft apparatus, gyroscopes, static and dynamic balancing machines, wireless strain remote monitoring WSDA link, stroboscope, gearbox with spur gear arrangement to perform condition monitoring studies, planetary gearbox for wind turbine fault diagnosis, NI DAQ system for data acquisition, sensors for lubricating oil monitoring and microphones for acquiring acoustic signals, Laser Doppler Vibrometer a contactless sensor for vibration monitoring.

Tribology laboratory is equipped with a number of sophisticated equipment to study the friction and wear characteristics of bulk materials, coatings and lubricants. The available facilities include pin-on-disc tribometer, four ball tester, scratch tester with humidity controller, journal bearing equipment, electrostatic spray coating system, tool maker's microscope , infrared thermometer and ABAQUS simulation software

RACE (Refrigeration, Air-conditioning and Energy) laboratory is equipped with the refrigeration and air conditioning test rigs, Solar dryer test rig, energy storage test rig, Brix meter, DYNEO DD-600F refrigerated/heating circulator, cool thermal energy storage (CTES) test system, wind emulator, wind energy training system, indoor air quality testing instrument with air quality probe having digital multimeter, cooling tower, heat pump test rig, evaporators, steam power plant test rig, PCM test setup, solar PV training & research systems, solar concentrator training system and solar thermal training systems and data loggers and data acquisition system.

Heat Transfer laboratory is equipped with heat transfer and heat exchanger modules, convection, conduction and radiation equipment setups, convection drier, thermal constant analyser, flame propagation unit, computerized fluidized bed, and a high speed camera (model no: Phantom VEO440L). Apart from these, a temperature test chamber (-5 ^{o}C to 70 ^{o}C), battery testing equipment, 3-stage hybrid evaporative cooling system, Bryair dehumidifier, ultrasonic humidifier, ejector based hybrid vehicle thermal management system are also added in its feather.

Hydraulic Machines laboratory has the following equipments: centrifugal pumps, submersible pumps, hydraulic turbines, Wind Tunnel Test Rig, a nozzle performance test module, modular air flow bench, Laser flow visualization, hotwire anemometer and rheometer.

IC Engines laboratory is equipped with computerized SI and CI engine, AVL Ditest MDS 650 system with features such as smoke meter and gas analyzer, pressure sensor adapter & tooling device, computerized dual fuel VCR system, a test rig for evaluating alternate fuels, LPG & CNG sequential kits.

Also Mechanical Engineering Department is supported by a **Central Workshop** and a **Centralized CAD laboratory.** Central Workshop is an autonomous unit, equipped with numerous manual, semi-automatic and automatic machine tools and machines and providing services to all other departments and divisions. Centralized CAD laboratory has a variety of computer aided design and engineering software like Pro/Engineer, ANSYS, COMSOL, MATLAB, etc. In addition, the Mechanical Engineering Department has collaboration with Hemair Systems Ltd. Hyderabad, for establishing an **ISO-6 (Class-1000) Clean Room** in the institute for micro-electro-mechanical systems (MEMS) fabrication, which is part of the Institute's Technology Business Incubation (TBI) programme funded by the Department of Science and Technology (DST), Government of India

Since its inception, the **EEE department** at Hyderabad campus has established laboratories with Equipment and Software worth more than ₹ **20.55** Crores. Currently, the 17 lab rooms are spanned in more than 31,000 square feet area. These labs include, Analog Electronics Lab, Communication Systems Lab, RF & Microwave Engineering Lab, Microelectronic Circuits Lab, Digital Design Lab, Microprocessor and Interfacing Lab, Digital Signal Processing Lab, Electrical Machines Lab, Control System Lab, Power Electronics Lab, Power systems lab, Instrumentation and Transducers lab, MEMS, Microfluidics and Nanoelectronics (MMNE) Lab, Optical Communications Lab, Advanced Communication Lab, Embedded Systems lab, Data processing Lab, Machine Learning Lab, Advanced Digital Communication Lab, FPGA design Lab, Mobile and personal communication, Computer Architecture, VLSI CAD Lab, Advanced Computing Lab, High Voltage Lab, IoT Lab, Electronic Materials and Devices Lab (EMDL), VLSI Architecture Lab, Analog VLSI Design Lab, Software for Embedded System Lab. These labs cater the teaching and learning requirement of the undergraduate programs in EEE, ECE & EEI and the higher degree programs in Communication Engineering, Embedded System Design and Microelectronics. Further, the students' projects, thesis, PhD research work and several sponsored projects are also implemented in these labs. A summary about a few labs are given here alphabetically:

Advanced Computing Facility is the best-in-class and one of the core labs catering to the computational needs of many laboratories in the Department. Advanced Computing Facility consists of 12 High-Performance Computing server nodes, Red Hat Enterprise Linux (RHEL) and Community Enterprise OS (CentOS), High-Performance Computing Software, and 150 High-Performance Workstations along with several general computing resources also.

Communication Systems Lab covers the basic understanding of functionalities of various block-sets involved in communication system. It involves system design and simulation exercises using MATLAB and Simulink and experiments based on HW boards. In this Lab, the students study in detail about the various types of modulators and demodulators,

transceivers and spectrum analyzer and also different types of Pulse Code Modulation (PCM) formats both using hardware and software.

Electronic Materials and Devices Lab holds the cutting edge Nanoelectronic and opto-electronic devices fabrication, characterization, and simulation facilities such as thermal evaporator, Chemical Vapor Deposition, rapid thermal processor, spin-coater, Hot Air Oven, Electrospinning set up, Materials synthesis equipment, different furnaces (with ambiances), Automated Agilent B2912A SMU, Probe station, Keithley 2450 SMU, Four probe unit, Solar simulator, RF amplifier, optical exposure unit, Plasma Transistor Setup. Electrochemical WorkStation etc.

Instrumentation Lab focused on designing and developing various instrument layout including sensing unit, data processing unit and signal processing unit. Various data acquisition hardware, sensors, mini-microprocessors, LCD interfacing and governing software are covered in this lab.

Internet of Things Lab provides the concepts of IoT, its ecosystem, widespread applications, and design challenges. The experiments include interaction options with real-world objects through cyber-infrastructure, systematic development of IoT based solutions, approach to handling data from IoT, introduction to Python programming and Raspberry Pi kit, introduction to Arduino programming and develop controllers, basic machine learning to process data from IoT on the fly, understanding the security implications while deploying IoT applications, and basics of developing mobile applications to command and control IoT. A wide variety of sensors, actuators, and controllers are available to design real-time projects. A number of simulation platforms facilitate the understanding of cloud computing and sensor networks.

High Voltage Lab has recently been set up and it consists of all state-of the art equipment such as 100 KV AC/DC Source and control panel, 3 stage 300 KV 3 KJ Impulse Generator, C and Tan-delta Test Kit (Schering Bridge), Vacuum and Pressure Vessel, Rod Gap Apparatus – Horizontal Sphere Gap Apparatus, Rain Making Equipment, Salt Fog Chamber, and Electrolytic Tank 2-channel Arbitrary function generator 60 MHz Bandwidth, Real time signal analyzer 6 KHz - 6.2 GHz, On the other side, some sophisticated instruments also added up which include Solar simulator, Laser engraver, contact angle measurement, UV laser writer, and dry film photoresist. On the other side, some sophisticated instruments also added up which include Solar simulator, Laser engraver, contact angle measurement, UV laser writer, and dry film photoresist.

MEMS, Microfluidics & Nanoelectronics (MMNE) lab is working towards realizing futuristic smart sensors and intelligent energy harvesters encompassing various Multidisciplinary domains. This include micro/ nanoelectronics; 3D printed sensors/ actuators; microfluidics; miniaturized Bio/Chemical Fuel Cells; Solar cells; Bio-Electro-Chemical sensors; printed /flexible /wearable/implantable devices; Bio-MEMS etc. MMNE lab has a multitude of fabrication and testing capabilities such as soft-lithography, inkjet printing, 3D Printing, direct UV/ CO2/ Visible laser writing, paper-based devices, different types of microscopies, electrochemical/ optical detection setups, Solar simulators, high-speed vision etc. The global industry-academia-government collaboration of MMNE lab is directed at addressing scientific gaps and developing relevant technology while imparting state-of-the-art knowledge in the field.

Power Electronics Lab covers modelling, simulation and experimental verification different power electronics devices/converter applications. Students are also provided with power electronic drives for performing minor projects as part of the power electronic course. Lab Consists hardware: 3-Ø Power Module, SCR – Diode Power Module, IGBT – Diode Power Module and Software: MATLAB - 2015a, P-Sim Software.

RF & Microwave Engineering Lab consists of various microwave equipment and components, to determine and plot the characteristics of Gunn Oscillator, Reflex klystron and other passive microwave components. It also included how to use various simulation software to design various microwave devices with desired characteristics, scattering parameters and field patterns. Using ANSYS HFSS to

Design Waveguides, Microstrip Antenna, Microstrip Quadrature Hybrid & Design of Ring Hybrid. The Lab is also augmented with Rapid prototyping PCB Machine and Anechoic Chamber for Antenna Measurements recently. In addition to this high end work stations and softwares like CST Studio, COMSOL, AWR Office, ADS & HFSS are available

Software for Embedded Systems Design lab supports students in learning software development process as well as modeling complex embedded systems using Unified Modeling Language (UML). Students also learn to program embedded systems using Embedded C and RTOS as well as implement intelligent embedded system designs using Python programming language. The Lab has open-source tools such as Robot Operating System (ROS) and Simulators such as Gazebo, to create 3D scenarios on a computer with robots and obstacles, etc. to challenge the students to carry out interesting projects.

VLSI Lab has Industry-standard licensed tools for Computational VLSI & VLSI Design, such as Cadence EDA tools (Research Bundle), Synopsys TCAD tools (Advanced Research Bundle), Synopsys Front-End and Back-end tools, Synopsys Quantum-Wise Atomistic Modeling tools, Mentor Graphics HEP-I and HEP-II tools, etc.

Apart from these, EEE Department is leveraging the facilities provided by a Central Workshop, Centralized CAD Lab Central Computing Facility, Central Analytical Lab, and a Clean Room.

Sandboxx

Sandboxx is a multi-disciplinary platform to develop technologies in the domains of Internet of Things, Wearable Technologies and Consumer Electronics. The lab is envisioned as a platform that enables students in the creation of technologies that solve real world problems at the interface of engineering (Mech, EEE, CS, etc) sciences (biology, pharmacy, physics, etc) and design. This lab is for facilitating student ideas and implementation with easy access to equipment and tools such as sensors, microprocessors, power tools etc

Tinkerers' Lab

The Tinkerers' Lab is a new addition to Sandboxx and both collectively function under I-Cell. A Tinkerer is someone who enjoys experimenting. At Tinkerers' Lab, we promote and motivate such tinkerers with the objective of growing the community of innovators. We provide them the platform to convert their creative and innovative ideas into actual engineering products. The Lab is one of its kind advanced technical facility where innovators get an opportunity to apply the theoretical knowledge learned in classes. The lab is spread over total floor area of more than 2500 sq.ft and the facility is currently being utilized by 80 innovators.

Some of the projects that are being innovated at the Tinkerers' Lab include but are not limited to Hybrid Aerial Vehicles, Sub scaled Rockets, Autonomous Underwater Rover.

Technology Business Incubator (TBI)

The role of technology business incubator is to proliferate overall entrepreneurial process and thus increasing the competiveness and bring about sustain development to an innovative idea till formation of a successful venture. A Technology Business Incubator (TBI) can ably support such an environment by nurturing technical bents of mind and innovations. TBIs are, a desirable link, in the present context between manifesting the potential of technical innovations and New Enterprise Creation & Growth. The essence of economic development lies in the pace of entrepreneurship development.

Against this backdrop BITS-Pilani, Hyderabad has promoted a Technology Business Incubator, The Incubator is supported by National Science and Technology Entrepreneurship Development Board, DST, Govt. of India.

The Technology Business Incubator at BITS-Pilani, Hyderabad aimed at fostering technology/knowledge based entrepreneurial start-ups by:

- Nurturing them at an early-stage and helping them overcome limitation trough low cost services

- Offer value added services viz. legal, financial, technical, IPR, mentoring, business networking (National and international) etc. to incubatee's
- Providing business environment for operation with well-equipped infrastructure support
- Commercialization of technologies and nurturing any such business collaboration for profitable business
- Strengthening business skills/knowledge startups and making them more enterprising
- Skill development in the region in terms of innovation and Entrepreneurship and creating job opportunities.
- Creating a sustainable ecosystem with multiple stakeholders for enterprise creation.

Sectors of Intervention:

TBI will offer services in diverse sectors. To begin with, TBI@BITS Hyderabad aims to provide a low cost and resource intensive sandbox for Health-Tech, Bio-Tech and Devices where entrepreneurs can develop their product, services or process ideas towards commercialization.

Current Infrastructural support and facility

Working Area

Office space and co-working for startups

Bio-Tech/Pharma Lab

Lab space around 2000SFT is available for startups

3D printing

MEMS clean room (Micro-Electro-Mechanical Systems)

Clean room (Micro and Nano Fabrication Facility)

https://universe.bits-pilani.ac.in/hyderabad/cleanroom/cleanroom

BITS Pilani Hyderabad campus has established state of the art facilities for Micro and Nano semiconductor device fabrication and characterization. The size of the clean room is 581 sq. ft and 80% of it is maintained as (ISO 6) class 1000 and the rest is class 100 (ISO 5). Complete class 100 area covered with yellow light and dedicated for Lithography process. This facility consists of the following equipments: Wet chemical work station for semiconductor and other clean applications, Two-inch tubular furnace capabilities, Spin coater system, Probe station with source measure unit, UV exposure system, Electron beam evaporator system and Mask aligner with accuracy up to 3 micrometer. .

Makers space: 3D printer's, CNC machine, machining tools, Lathe etc.

Psychoacoustics Laboratory: Department of Humanities and Social Sciences has the psychoacoustics laboratory. It is a chamber with walls covered in anechoic material, providing quieter environment. The lab is used for running the hearing experiments, and for recording experimental stimuli with minimal noise intervention. Basic recording equipment is available.

Library facility

The Library at BITS Pilani – Hyderabad Campus is a gateway to knowledge resources. The Library is one of the central support services of the BITS Pilani - Hyderabad Campus. It provides information services and access to textual and bibliographic digital and print resources to the BITS Community—Institute's state-of-the-art Library with two floors spread over 45000sq.ft. Open seven days a week till 9 pm and during the tests and examinations till 1 am (midnight). It has over 43500 books, 1340 educational CD-ROMs and subscribes to over 87 Indian and foreign journals. The Library also subscribes to 9900+ e-journals like American Chemical Society,American Society for Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), Association of Computing Machinery (ACM), JSTOR, SciFinder, SCOPUS, Royal Society of Chemistry, IOP, APS, Nature, IEEE, Science Direct, Wiley online, JoVe, etc. The Library has over 8000 e-books on engineering, computer science, life sciences and Bio-Medical Engineering. In the Digital Library, the previous year's question papers are available. The library operations are

fully computerized, and students can have access to the Online Public Access Catalogue (OPAC) from their hostel rooms. Recently, RFID (Radio-Frequency Identification) technology and self-check-in and Check-out facility were introduced in the Library. The introduction to RFID has enabled faculty and students to borrow and return materials whenever the Library is open. No time restrictions for books issues and returns. Self-service facilities also allow for a much faster and more efficient way of borrowing and returning books. Discussion rooms are available in the Library for the faculty and students to meet and discuss their project and other academic-related work. The Library is equipped with the most modern furniture. The Library has been designed, considering the future growth of the library collection and user's need in the coming years. The Library is fully air-conditioned with a WI-FI facility as well.

Students Activity Centre (SAC)

Games and Sports

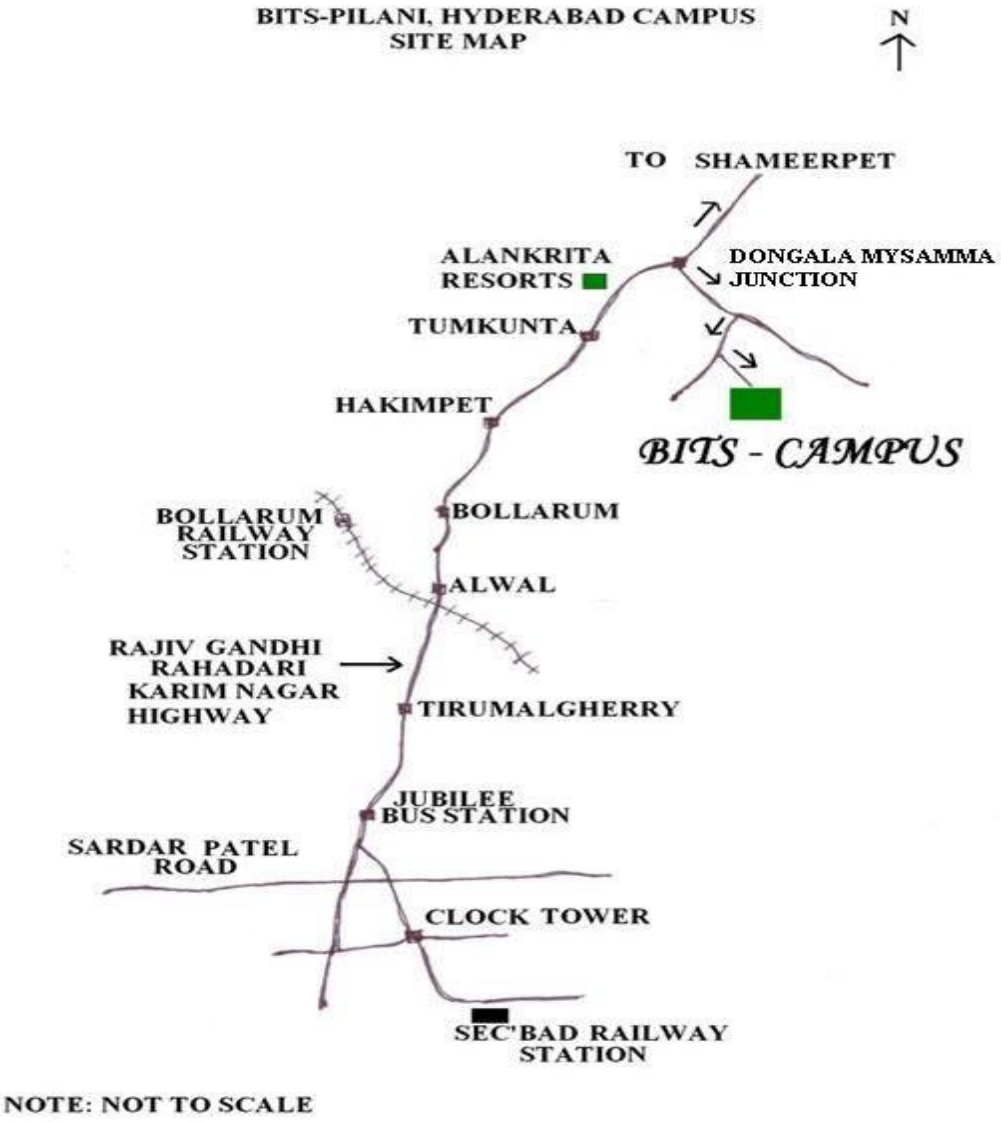
To ensure overall development of every student, the institute provides multiple avenues for relaxation, health and fitness through sports and recreation facilities. Student Activity Centre (SAC) offers facilities for various Indoor Games & Sports like Chess, Carroms, Table Tennis, Pool Table, Snooker, Billiards Badminton and Squash. A Gymnasium (With separate sections for strength and weight training) with state-of-the-art equipment is available here.

In addition to indoor facilities, modern facilities for outdoor sports like Tennis, Basketball and Throw ball are available in SAC premises. Two indoor Badminton courts with wooden flooring, two Tennis and Volley Ball courts with synthetic surface have been provided with flood lights. The cricket ground having two pitches with grass playfields along with a spectator gallery is located inside the institute premises. Three synthetic grass turf pitches are also provided besides the ground for practice. Football and hockey ground along with kabaddi courts are located centrally inside the institute. 400 mts standard clay track along with football field and swimming pool (short course) available in the Camus. In addition to the common sports facilities, separate play areas for volley ball, table tennis, chess and carom are provided in each hostel.

Student Clubs

A separate hall with wooden flooring is being provided for Dance. The Students Union and various clubs like Music (Indian and Western), VFX, Photography, Dramatics, Shades (Fine Arts) and English Language Activities Society (ELAS) are provided with rooms inside SAC to pursue their activities. Many more clubs share space in SAC for their activities.

A variety of musical instruments like synthesizers, drums, guitars, etc., have been made available for students of the Music Club to encourage them to practice and perform.



Institutional address:

Jawahar Nagar, Kapra Mandal,
Medchal District, Hyderabad – 500078.
Telangana State. Phone: 040 – 66 303 999.
Home page: http://universe.bits-pilani.ac.in/ /Hyderabad

MEMBERSHIP OF DISTINGUISHED BODIES

The Institute is an institutional member of the following Associations and Bodies:

(i) Association of Commonwealth Universities, London.

(ii) Association of Indian Universities, New Delhi.

(iii) Current Science Association, Bangalore.

(iv) Federation of Indian Chambers of Commerce and Industry – Higher Education Network, New Delhi.

(v) India International Centre, New Delhi.

(vi) Indian Association of Social Science Institutions, New Delhi.

(vii) Indian Distance Education Association, Hyderabad.

(viii) Indian Institute of Foreign Trade, New Delhi.

(ix) Indian Society for Technical Education, New Delhi.

(x) Institution of Communication Engineers and Information Technologists, New Delhi.

(xi) International Association of Universities, Paris.

(xii) International Council for Open and Distance Education, Oslo, Norway.

(xiii) National Council of Applied Economic Research, New Delhi.

(xiv) Petrotech Society, New Delhi.

(xv) Pharmacy Council of India, New Delhi.

(xvi) The Institution of Engineers (India), Kolkata.

(xvii) World Association for Cooperative Education, Boston, USA.

(xviii) Council for Advancement and Support of Education, Washington.

(xix) Association for Institutional Research, Florida

COLLABORATION WITH FOREIGN EDUCATIONAL INSTITUTIONS

The Institute has collaborative arrangements in terms of exchange of students, faculty and information with the following institutions:

1. The University of Oklahoma, Norman, Oklahoma, U.S.A.
2. Tulane University Medical Centre, New Orleans, Louisiana, U.S.A.
3. Purdue University, West Lafayette, Indiana, U.S.A.
4. Uniformed Services University of the Health Sciences, Bethesda, Maryland, U.S.A.
5. Kathmandu University, Kathmandu, Nepal.
6. University of Otago, Dunedin, New Zealand.
7. Rivers State University of Science and Technology, Nigeria.
8. University of Colombo, Srilanka.
9. George Mason University, Fairfax, USA.
10. ETA Network of Education and Training, Dubai, UAE.
11. University of Windsor, Windsor, Canada.
12. The George Washington University, Washington, USA.
13. Massachusetts Institute of Technology, Cambridge, Massachusetts, USA.
14. Cornell University, Ithaca, USA.
15. Northeastern University, Boston, USA.
16. Waseda University, Tokyo, Japan.
17. Högskolan i Borås (University College of Borås), Sweden.
18. The University of New South Wales, Sydney, Australia.
19. Binghamton University (State University of New York), Binghamton, New York, USA.
20. Victoria University of Technology, “Victoria University”, Melbourne, Australia.

21. University of Southern California, California, USA.
22. Iowa State University of Science and Technology, Ames, Iowa, USA.
23. University of Maryland, College Park, USA.
24. Kansas State University (KSU), Manhattan, Kansas, USA.
25. Arizona State University IRA A. Fulton School of Engineering, USA.
26. The Tun Hussein Onn National Eye Hospital, Petaling Jaya, Malaysia and National Institute of Ophthalmology, Petaling Jaya, Sede Boquer Campus, Malaysia.
27. Universities of Ontario, Canada.
28. The Jacob Blaustein Institute for Desert Research (BIDR) of Ben Gurion University (BGU), Israel.
29. Utah State University, Logan, USA.
30. York University, Toronto, Ontario, Canada.
31. University at Buffalo, The State University of New York, USA.
32. University of Dundee, United Kingdom.
33. Lund University, Sweden
34. Helsinki University of Technology, Espoo, Finland.
35. Carnegie Mellon University, Software Engineering Institute, Pittsburgh, PA 15213, USA.
36. TELECOM Bretagne, Cedex 3, France.
37. The University of North Carolina at Greensboro, Greensboro, NC, USA.
38. The University of Toledo, College of Engineering Toledo, Ohio, USA.
39. Lunghwa University of Science and Technology, Taoyuan, Taiwan.
40. Ecole Nationale Supérieure D'Ingénieurs De Limoges (ENSIL), Université de Limoges, France.
41. Concordia University, Montereal, Quebec, Canada.
42. Technische Universität Braunchweig, Germany.
43. Faculty of Engineering and Graduate School of Science and Technology, Kumamoto University, Japan.
44. Carleton University, Ottawa, Canada.
45. University of Savoie, Chambéry Cédex, France.
46. Carnegie Mellon University, Software Engineering Institute, Pittsburgh, PA 15213, USA.
47. La Trobe University in Australia.
48. University of Rhode Island, Rhode Island, Kingston, USA.
49. USC Viterbi School of Engineering, USA.
50. RAK Medical & Health Sciences University, UAE.
51. New Mexico State University, USA.
52. "n+i" Network of Engineering Institutes, France.
53. Pace University, New York, USA.
54. Florida International University, Miami, Florida, USA.
55. Norwegian University of Life Sciences (NMBU), Norway.
56. University College Dublin, National University of Ireland, Dublin.
57. Macquaire University, Australia.
58. Michigan State University, College of Engineering, East Lansing, Michigan, USA.
59. The University of Wisconsin-Madison, USA.
60. University of Tartu, Estonia, EU.
61. University of Limoges, France.
62. CSIR National Institute of Oceanography(NIO), Goa.
63. The Universite De Perpignan Via Domitia, France.
64. Tunghai University, Taichung, Taiwan.

65. Carleton University, Ottawa, Canada.
66. University of Leeds, Leed, United Kingdom.
67. School of Mechanical Engineering, Kyungpook National University, Republic of Korea.
68. The Technische Universitat Braunschweig, Germany.
69. The Uiversity of South Florida, Florida, USA.
70. Tel Aviv University, Israel.
71. Cardiff University, Cardiff, U.K .
72. Maktoum Bin Hamdan Dental University College, Dubai.
73. Saint Petersburg Electro technical University, Russia.
74. The Graduate School of Engineering, Hiroshima University, Japan.
75. Memorial University of Newfoundland, Canada.
76. Al Ain University of Science and Technology, Al Ain, UAE.
77. The University of Nottingham, UK.
78. University College Dublin, Ireland.
79. University of Virginia, Charlottesville, Virginia, USA.
80. Hiroshima University, Hiroshima, Japan.
81. International Center for Biosaline Agriculture, Dubai, UAE.
82. Trinity College, University of Dublin, Dublin, Ireland.
83. The College of Engineering, National Cheng-Kung University, Tainan, Taiwan.
84. Ontario Universities International, Toranto, Canada.
85. The University of Queensland, St. Lucia, Australia.
86. College of Life Sciences, Kaohsiung Medical University, Taiwan.
87. Nanhua University, Taiwan.
88. The Norwegian University of Science and Technology (NTNU), Gloshaugen, Norway.
89. The University of Illinois, Champaign, USA.
90. International Water Association (IWA), London (United Kingdom)
91. University of Agder, Grimstad (Norway)
92. University of Central Florida, Orlando (U.S.A.)
93. Pace University, New York, USA
94. La Trobe University, Australia
95. Kregzo, Dubai, UAE
96. Curtin University, Australia
97. FIGURE Network Association Poitiers, France
98. Leonardo MW Ltd., Edinburgh, U.K. – Defence & Research
99. RAK Medical & Health Sciences University, UAE
100. University of Virginia Charlottesville, USA
101. Macquarie University, Sydney, Australia
102. Memorial University of Newfoundland, St John’s, NL, Canada
103. Ben-Gurion University of the Negev, Beer-Sheva, Israel
104. Telecom Paris, France
105. Veggitech, UAE
106. KTH Royal Institute of Technology, Stockholm, Sweden

PART II
EDUCATIONAL PROCESS AND PROGRAMMES OF STUDIES

EDUCATIONAL PROCESS

The mission of BITS Pilani is to prepare young men and women to act as leaders for the promotion of the economic and industrial development of the country and to play a creative role in society. It has the reputation of a highly purposive and innovative university often setting the pace for workable reforms in higher education, suitable and relevant for the Indian cultural milieu.

BITS Pilani has been following semester system with continuous and internal evaluation since its inception. The educational programmes are modular and flexible. Through its Practice School programme, BITS Pilani has established purposeful linkages with industries. The Institute has evolved a direction for Research which makes research relevant to the national development and social needs. It has developed and adopted a unique academic administrative structure which makes all its innovations possible and workable.

The Institute operates educational programmes at three tiers of education, namely, the Integrated First Degree programmes, Higher Degree programmes and the Doctoral programmes. All programmes in the Institute are designed to allow as many components of science and applied science as are necessary for the graduates of the programmes to function effectively and efficiently in the technological society. All programmes contain certain structural commonality and the common courses are invariably operated together irrespective of the clientele who are required to take the courses. Similarly, irrespective of the ultimate degree for which a student qualifies, the large factor of this commonality between all students creates an educational basis which provides easy professional linkage, communication and group activity among students graduating in different degrees. This similarity among different students graduating with different degrees is further welded in a stronger professional bond when they work as internees in the Practice School stations or as members in a team working on mission-oriented time-bound research and development projects.

The various structural flexibilities provide not only scope for multiple point entries but also enable the system to accommodate many legitimate educational and operational needs of students. Some of these aspects are described in various sections that follow.

PROGRAMMES OF STUDIES

All programmes of studies are based on the principle that a series of courses make up the hierarchy of the structure where each course is self-contained but nevertheless acts as a bridge between what precedes and what comes after. A formal contact hour is such that a student is invariably required to spend several times of these hours towards self-study. Attempt here is to awaken curiosity in the mind of the student and train him to think rationally and scientifically and enable him to face the unfamiliar. Through the Practice School option, the flavour of the professional world is sought to be imbibed by the student as well as the teacher. Even many co-curricular activities are converted into a learning situation whereby the growth of a student becomes a continuing operation.

The Institute also conducts Off-campus Work-Integrated degree programmes as a means of continuing education for employed professionals as part of the human resource development programmes of specific organizations at the various off-campus centres. In all these programmes, emphasis is on self-learning and the pedagogy attempts to incorporate as many modern technologies as desirable. While each one of these programmes requires collaboration of an organization, some programmes have a highly structured collaboration with planned classroom activities and some programmes may have less structured planning. While a number of degrees are offered through structured collaboration with many collaborating organizations, there are also degrees, which are available in an open manner for a large number of organizations, each of which may sponsor only few students. For all these programmes,

faculty/resource persons are drawn from the Institute and the participating organizations as well as other Institutions.

The Three Tier Structure shown on page II-3 gives all the programmes offered by the Institute.

Integrated First Degree Programmes

The Integrated First Degree Programmes are offered at the first tier with nomenclatures like B.E., B.Pharm. and M.Sc.. These are all level wise equivalent degrees. These are called integrated degrees for two reasons: (i) there are several common courses amongst these degrees, and (ii) no intermediate degrees, like, B.Sc. etc. are awarded. These degrees are based on a modular structure and their academic requirements are spelt out in respect of the number of courses and units rather than the number of years. All these programmes are structured in such a way that normally a student will be able to finish a programme in eight semesters. Of course, the flexibility of the Institute allows a student to do his programme at a faster pace and finish it earlier than 8 semesters or at a slower pace to finish it later than 8 semesters.

(a) B.E.

These programmes in engineering are mathematics and hard science based and incorporates many up-to-date techniques of analysis and synthesis.

(b) B.Pharm.

This programme has been so structured that it not only meets the requirements of the Pharmacy Council of India but also has additional courses which give a shape and flavour of both engineering and fundamental sciences to the programme.

(c) M.Sc. (Programmes under Group B)

These are integrated degree programmes without any intermediate B.Sc. degree. While these programmes ensure the required science component in any comparable postgraduate science degrees of other universities are met, they also incorporate many courses which have been notionally considered to be part of the engineering domain. The integrated nature of the programmes and their analytical and engineering science contents give them a professional character and enable students to participate usefully in industrial jobs. While a good 10+2 input may be able to complete these programmes in four years, any person coming from 10+2+3 system with a B.Sc. degree admitted on advanced standing basis will require two to three years to finish the programme. Almost all students who are admitted for these degrees also aspire and work towards a second degree under the dual degree scheme.

(d) M.Sc. (Programmes under Group C)

These programmes are basically multi-disciplinary and technological in character and are designed to meet the requirements of newly emerging professional activities. The areas which are currently incorporated in these degree programmes are Information Systems, Finance and General Studies.

The programme on Information Systems gives among other things a good exposure to the students on computer software and software engineering techniques, both at the conceptual and application levels. The Finance degree has been designed to meet the manpower needs arising due to the new thrust given to growth patterns in the economy. The courses planned for this programme are of such a nature that they fulfil the requirements of financial institutions as well as financial management needs of any industry. This programme is complementary to the M.Sc. Economics programme.

Details of Work Integrated Learning Programmes are given in Part V.

Birla Institute of Technology & Science, Pilani

Three Tier Structure of Education

Ph. D. Degrees	
Higher Degrees	
On-campus programmes	**Work-Integrated Learning Programmes**
M.E. Biotechnology, Chemical, Civil with specialization in Structural Engineering, Civil with specialization in Infrastructure Engineering & Management, Civil with specialization in Transportation Engineering, Computer Science, Communication Engineering, Design Engineering, Embedded Systems, Manufacturing Systems Engineering, Mechanical, Mechanical with specialization in Thermal Engineering, Microelectronics, Software Systems, Sanitation Science, Technology and Management ***Chemical with specialization in Petroleum Engineering, Chemical with specialization in Nuclear Engineering, Civil with specialization in Water Resources Engineering, Computer Science with specialization in Information Security, Electrical with specialization in Power Electronics & Drives* **M. Pharm.** M. Pharm., M. Pharm. with specialization in Pharmaceutics, M. Pharm. with specialization in Pharmaceutical Chemistry, M. Pharm. with specialization in Pharmacology **M. Phil.** Biological Sciences, Chemistry, Economics, English, Management, Mathematics, Physics, Liberal Studies **Master of Business Administration (MBA)** Finance, Information Systems Management, Marketing, Operations and Decision Sciences, Organization Behavior and Human Resource Management, Strategy & Entrepreneurship	**M.B.A.** Business Analytics, Consultancy Management, Finance, FinTech, Hospital and Health Systems Management, Manufacturing Management, Quality Management. **M. Tech.** Automotive Electronics, Automotive Engineering, Computing Systems and Infrastructure, Data Science and Engineering, Design Engineering, Digital Manufacturing, Embedded Systems, Environmental Engineering, Manufacturing Management, Microelectronics, Pharmaceutical Operations and Management, Quality Management, Sanitation Science, Technology and Management, Software Engineering, Software Systems, Systems Engineering, **Telecommunications and Software Engineering, **Transportation Engineering

Integrated First Degrees			
On-campus programmes			**Work-Integrated Learning Programmes**
Group A	**Group B**	**Group C**	
B.E. Biotechnology, Chemical, Civil, Computer Science, Electrical & Electronics, Electronics & Communication, Electronics & Instrumentation, Manufacturing, Mechanical **B. Pharm.**	**M.Sc.** Biological Sciences, Chemistry, Economics, Mathematics, Physics	**M.Sc.** General Studies, ***Information Systems, ***Finance*	**B.Sc.** Design & Computing, **Pharmaceutical Sciences **M.Sc.** Business Analytics, **Information Systems **B.Tech.** **Engineering Design, Engineering Technology, **Information Systems, Manufacturing Technology, **Power Engineering, Process Engineering..
***These programmes are not offered during academic year 2020-21*			
Minor programs			
Minor programs are being offered in certain areas as options for integrated first degree students with the intent of encouraging them to add focus to their supplemental learning (outside a major area) as well as recognizing and certifying the knowledge obtained in an area that is outside of their major area. A minor would allow a Department (or multiple Departments) to offer a package of courses in an area/sub-area to students for whom this area/sub-area would not be part of their (major) program (e.g. a minor in Finance for students who are not pursuing a program in Finance). A minor will be recognized by means of a separate certificate. The details of minor programs are described in Part IV of this Bulletin.			

For Admission to on-campus programmes	
Integrated First Degree :	**Higher Degree :**
For admission to all the programmes: Candidates should have passed the 12th examination of 10+2 system from a recognized Central or State board or its equivalent with adequate proficiency in English. Except for admission to B. Pharm., the candidates should have Physics, Chemistry, and Mathematics as subjects. For admission to B. Pharm. , candidates should have Physics, Chemistry, and either Biology or Mathematics as subjects.	Normal input: Integrated First Degree of BITS Pilani or its equivalent. **Ph.D. Degree:** Normal Input: Higher Degree of BITS Pilani or its equivalent.

The General Studies programme aims at providing an opportunity to the students to acquire specific skills to meet varied career objectives through judicious use of electives and project oriented courses. Students are given opportunities to take two different streams, namely Communications and Media Studies or Developmental Studies by choosing courses of specific streams. Further, the requirements of mathematics, science and applied science, etc. are normally different from Group A and Group B Programmes. Candidates admitted to this programme have to take humanities courses as well as certain general science and technology courses.

All the Integrated First Degree programmes described above have a Practice School option which consists of two courses, Practice School I and Practice School II. A student goes to Practice School I of two months' duration during the summer following second year and to Practice School II of five and a half months' duration during the final year. The curriculum, through Practice School, finds a formal method of bringing the reality of professional environment into the educational process.

For the various programmes in all the three tiers of education, the admission policy and the educational process at BITS take care of multiple entry into the programmes and allow several other flexibilities. The on-campus integrated First Degree programmes are divided into Groups A, B and C. The following table provides a tabular condensation of the information.

INTEGRATED FIRST DEGREE PROGRAMMES

Name of the Programme	Normal Input	Special features
Group A programmes: B.E. : Biotechnology : Chemical : Civil : Computer Science : Electrical & Electronics : Electronics & Instrumentation : Electronics & Communication : Manufacturing : Mechanical B.Pharm. **Group B Programmes:** M.Sc. : Biological Sciences : Chemistry : Economics : Mathematics : Physics **Group C Programmes:** M.Sc. : General Studies	**For admission to all the programmes:** Candidates should have passed the 12th examination of 10+2 system from a recognized Central or State board or its equivalent with adequate proficiency in English. Except for admission to B. Pharm., the candidates should have Physics, Chemistry, and Mathematics as subjects. For admission to B. Pharm. , candidates should have Physics, Chemistry, and either Biology or Mathematics as subjects. **Admission to all the programmes is subject to the conditions given below:** Admissions will be made purely on merit. The merit position of the candidate will be based on the score obtained by the candidate in a Computer based Online Test (BITSAT) conducted by BITS, Pilani. The candidate should have obtained a minimum of aggregate 75% marks in Physics, Chemistry and Mathematics subjects (if he/she has taken Mathematics in BITSAT) or a minimum of aggregate 75% marks in Physics, Chemistry and Biology subjects (if he/she has taken Biology in BITSAT) in 12th examination, with at least 60% marks in each of the Physics, Chemistry, and Mathematics / Biology subjects.	**Duration:** Planning has been made such that a student will be able to finish any of the integrated first degrees in 4 years (8 semesters). However, the flexibilities available and the modular structure of the system will allow individual student to have variation in the duration of his degrees. Some can finish earlier than 4 years and some may take more than 4 years. Students who take two degrees simultaneously under dual degree scheme will spend about 5 to 5½ years (10 to 11 semesters). **Practice School:** All the integrated first degree programmes have Practice School options. **Dual Degree:** Institute offers dual degree facility to number of students who are admitted. The features of dual degree scheme are described later in this part under the section 'Flexibilities'. **Electives:** A student is required to complete at least 12 elective courses under the categories of Humanities electives, Discipline electives and Open electives. By judicious choice of these courses a student can obtain depth in his/her discipline and/or expand his/her horizon to gain exposure to one or more other areas of study.
For Details of Admission policy to Work Integrated Learning Programmes Refer to Part V.		

HIGHER DEGREE PROGRAMMES

M.E./M.Pharm./M.Phil.

The requirements of these programmes are described in terms of the total number of units which a student is required to complete rather than the duration. However, a normal student may be able to complete such a programme in four semesters, wherein the last semester may be spent for either of the two available alternatives, namely, Dissertation and Practice School. The programmes are intended to give a penetrating professional experience and an opportunity to acquire further competence either in one's own discipline or in many other traditional areas of Engineering, Pharmacy as well as interdisciplinary areas, like, Embedded Systems, Microelectronics, Software Systems, Biotechnology, Manufacturing Systems, Design Engineering, Transportation Engineering, etc.

Following is the exhaustive list of all the Higher Degree programmes approved by the Senate.

Name of the programme	Input
M.E.	**Normal input**
: Chemical	
: Chemical with Specialization in • Petroleum Engineering • Nuclear Engineering	Integrated First Degree of BITS in the same discipline or its equivalent.
: Civil with Specialization in • Infrastructure Engineering & Management • Structural Engineering • Transportation Engineering • Water Resources Engineering	
: Computer Science : Mechanical : Mechanical with specialization in Thermal Engineering	
: Communication Engineering : Electrical with specialization in Power Electronics and Drives	Integrated First Degree of BITS in Electrical & Electronics or in Electronics & Instrumentation or its equivalent
: Embedded Systems	Integrated First Degree of BITS in Electrical & Electronics or Electronics & Instrumentation or Computer Science or its equivalent.
: Design Engineering : Manufacturing Systems Engineering	Integrated First Degree of BITS in Mechanical or its equivalent. Any other Integrated first degree of A & B groups or M. Sc. Engineering Technology of BITS or its equivalent with the requirement of taking certain additional courses.
: Microelectronics	Integrated First Degree of BITS in Electrical & Electronics or Electronics & Instrumentation or Computer Science or Physics or its equivalent.
: Software Systems : Sanitation Science, Technology and Management	Any First Degree of the Institute, provided the minimum component of MATH, TA, Science, ENGG, prescribed in each of the groups A, B and C through compulsory requirements or conventional options. **Other inputs:** (a) For those Integrated first degree programmes under Work Integrated Learning Programmes which have no counterpart in Groups A, B and C, the minimum requirement should be at least what is prescribed in Group C. (b) Any equivalent degree from other University with preparation indicated above.
: Biotechnology	Any Integrated First Degree of BITS or its equivalent with adequate preparation in Bio-Chemistry and Microbiology.

Name of the programme	Input
: Sanitation Science, Technology and Management	Any Integrated First Degree of BITS or its equivalent in the areas of Biology, Civil, Chemical Engineering, and Chemistry. Any other M.Sc. or B.E. with adequate preparations may be considered for this programme
M. Pharm.	Integrated First Degree of BITS in Pharmacy or its equivalent.
: M. Pharm.	
: M. Pharm. with Specialization in Pharmaceutics	
: M. Pharm. with Specialization in Pharmaceutical Chemistry	
: M. Pharm. with Specialization in Pharmacology	
M.Phil. Liberal Studies	Any Integrated First Degree of BITS or its equivalent in respective discipline.

Special features of Admissions to any M.E. programme:

Students coming with integrated First Degree of BITS Pilani in A & B groups may be considered for admission to any M.E. Programme with the requirement of taking additional courses. The duration in these cases may be more than the normal duration and will be determined on a case by case basis. Similar dispensation may also be possible for students coming with an engineering degree from IITs and other reputed institutions.

Note: While no direct admissions are planned for M.Phil. degree, students who are admitted to Ph.D. may be asked whenever necessary, to register for this degree.

Master of Business Administration

The Institute is running an MBA programme with input requirement as First Degree of BITS Pilani or its equivalent. The programme endeavors to create manpower who have scientific and engineering approach to business administration. Students will also have a reasonable exposure to certain modern technologies. The programme is designed to have many flexibilities and a very strong component of industry project experience. The input for the programme may have multiple entry points. While principal input will be students already possessing an engineering degree, those who have other qualifications like B.Sc., B.A., B.Com. may also apply provided they have aptitude towards having training in science, mathematics and technology as well. The requirements of the programme will necessitate such students to spend additional time which may vary from 1 to 4 semesters depending upon their qualifications. For students not having an engineering degree, the course requirement will be worked out, looking at the earlier training on a case-by-case basis at the time of admission. However, for the current year, admissions are planned for an input with engineering degree only in which case the normal duration is 4 semesters.

Master of Business Administration (MBA) in	Input
(i) Finance (ii) Information Systems Management (iii) Marketing (iv) Operations and Decision Sciences (v) Organization Behavior and Human Resource Management (vi) Strategy & Entrepreneurship	Integrated First Degree of BITS or its equivalent or Master's Degree in any discipline from any recognized University

DOCTORAL PROGRAMMES

The Institute's Ph.D. programme is structured on the basis of a preferred input of those who have completed one of the Institute's higher degrees. It requires each student to finally qualify for formal acceptance in the programme only after passing a qualifying examination.

The Institute also offers a unique opportunity for working professionals to work for Ph.D. in the settings of their own work environments through part-time, Off-campus Ph.D. scheme.

Ph.D.	**Normal input** Any Higher degree of BITS or its equivalent. **Other inputs** a) Integrated First Degree of BITS or its equivalent. b) Any preparation between the above described first degree and higher degree. c) High professional standing and proven competence even without a formal degree. **Note:** Each case of other inputs will be decided on a case by case basis regarding admission and with the requirement of doing higher degree courses before taking qualifying examination. In the case of inputs with qualification like B.E., M.Sc., etc. the selected candidates will be required to do course work.	**Structure:** Qualifying examination, Research Methodology, teaching practice, Foreign language when required, Thesis and Seminar. Course work as specified for various input and prior preparation. **Locale:** Normally any of the BITS campuses and other off-campus locations with prior approval. **Ph.D. Aspirant:** To help in the development of professionals at large, provision exists for taking directly the qualifying examination as a `Ph.D. Aspirant' even before seeking admission to the Ph.D. Programme. The Aspirants can work in the settings of their own work environment with the approval of Research Board.

PROGRAMMES OFFERED AT BITS PILANI – PILANI CAMPUS

Integrated First Degree Programmes

B.E. Chemical
B.E. Civil
B.E. Computer Science
B.E. Electrical & Electronics
B.E. Electronics & Instrumentation
B.E. Electronics and communication
B.E. Manufacturing
B.E. Mechanical
B. Pharm.
M.Sc. Biological Sciences
M.Sc. Chemistry
M.Sc. Economics
M.Sc. Mathematics
M.Sc. Physics
M.Sc. General Studies

Higher Degree Programmes

M.E.:

Biotechnology
Chemical
Civil with specialization in Structural Engineering
Civil with specialization in Infrastructure Engineering & Management
Civil with specialization in Transportation Engineering
Communication Engineering
Computer Science
Design Engineering
Embedded Systems
Manufacturing Systems Engineering
Mechanical
Mechanical with specialization in Thermal Engineering
Microelectronics
Software Systems
Sanitation Science, Technology and Management

M. Pharm:

M. Pharm.
M. Pharm. with specialization in Pharmaceutics
M. Pharm. with specialization in Pharmaceutical Chemistry
M. Pharm. with specialization in Pharmacology

Master of Business Administration (MBA)

Doctoral Programme

Doctor of Philosophy (Ph.D.)

PROGRAMMES OFFERED AT BITS PILANI – K.K. BIRLA GOA CAMPUS

Integrated First Degree Programmes

B.E. Chemical
B.E. Computer Science
B.E. Electrical & Electronics
B.E. Electronics & Communication
B.E. Electronics & Instrumentation
B.E. Mechanical
M.Sc. Biological Sciences
M.Sc. Chemistry
M.Sc. Economics
M.Sc. Mathematics
M.Sc. Physics

Higher Degree Programmes

M.E.:

Biotechnology
Chemical
Computer Science
Design Engineering
Embedded Systems
Mechanical
Microelectronics
Sanitation Science Technology and Management

M. Phil

Liberal Studies

Doctoral Programme

Doctor of Philosophy (Ph.D.)

All these programmes have the same educational process, syllabus, evaluation method and academic flexibilities like transfer, dual degree etc. as followed at BITS, Pilani – Pilani Campus.

PROGRAMMES OFFERED AT BITS PILANI – HYDERABAD CAMPUS

Integrated First Degree Programmes

B.E. Chemical
B.E. Civil
B.E. Computer Science
B.E. Electrical & Electronics
B.E. Electronics & Communication
B.E. Electronics & Instrumentation
B.E. Mechanical
B. Pharm.
M.Sc. Biological Sciences
M.Sc. Chemistry
M.Sc. Economics
M.Sc. Mathematics
M.Sc. Physics

Higher Degree Programmes

Biotechnology
Chemical Engineering
Civil with specialization in Structural Engineering
Civil with specialization in Transportation Engineering
Communication Engineering
Computer Science
Design Engineering
Embedded Systems
Mechanical
Mechanical with specialization in Thermal Engineering
Microelectronics
Sanitation Science, Technology and Management

M.Pharm:

M.Pharm. with specialization in Pharmaceutics

All these programmes have the same educational process, syllabus, evaluation method and academic flexibilities like transfer, dual degree etc. as followed at BITS, Pilani – Pilani Campus.

Doctoral Programme

Doctor of Philosophy (Ph.D.)

All these programmes have the same educational process, syllabus, evaluation method and academic flexibilities like transfer, dual degree etc. as followed at BITS, Pilani – Pilani Campus.

PROGRAMMES OFFERED AT BITS PILANI – DUBAI CAMPUS

First Degree Programmes

- B.E. Chemical Engineering
- B.E. Civil Engineering
- B.E. Electrical & Electronics Engineering
- B.E. Mechanical Engineering
- B.E. Computer Science
- B.E. Biotechnology
- B.E. Electronics & Communication Engineering

Higher Degree Programmes

M.E.:

- M.E. Software Systems
- M.E. Microelectronics
- M.E. Electrical with specialization in Power Electronics and Drives
- M.E. Design Engineering

M.B.A. (Master of Business Administration)

Doctoral Programme

Doctor of Philosophy (Ph.D.)

TEACHING-LEARNING PROCESS

The objective of class room education is to awaken the curiosity of the student, generate habits of rational thinking in him/her, gear his/her mind to face the unfamiliar and train him/her to be able to stand on his/her own. With its team of committed and dedicated faculty, BITS Pilani aims at maximizing the learning process through teaching. Through their innovative teaching, the teachers enable the student search for knowledge on his/her own and motivate him/her to use the facilities like the library, laboratory and the environment to optimize his/her learning process. Self-study by the student is therefore an important factor in the planning of teaching and evaluation and in this environment the student exhibits interest and responds to this challenge. Teaching and evaluation form a unity of function and operate in a climate of mutual understanding and trust.

Every course whether single section or multi-section is conducted by a member of the faculty called instructor-in-charge, with the assistance, where necessary, of the required number of instructors – who will be partners with him in meeting the full academic perceptions and organizational needs of teaching the course and evaluating the students.

Within one week of the beginning of class work, the instructor-in-charge/ instructor announces to his class/section through a hand-out, the necessary information in respect of (i) the operations of the course (its pace, coverage and level of treatment, textbooks and other reading assignments, home tasks etc.); (ii) various components of evaluation, such as tutorials, laboratory exercises, home assignment, project, several quizzes/ tests/ examinations (announced or unannounced, open book or closed book), regularity of attendance, etc., (iii) the frequency, duration, tentative schedule, relative weightage etc. of these various components; (iv) the broad policy which governs decisions about make-up; (v) mid-semester grading; (vi) grading procedure (overall basis, review of border line cases, effect of class average, etc.) and (vii) other matters found desirable and relevant.

EVALUATION

All courses are conducted and evaluated in a continuous & internal manner by the faculty who teach these courses. The student registers for a certain number of courses each semester; the year being divided into two semesters, and a summer term, whenever offered. A faculty member, as registration advisor, helps a student to draw up his programme, suitable to his pace and needs, which is made possible by the coursewise time-table of the Institute. Every student gets, incidentally, a training in decision-making through (i) choice of load, i.e. number of courses per semester to suit his/her pace, (ii) selection of his/her own time-table to suit his/her convenience, and (iii) picking up courses as electives to meet his/her own aspirations. It is the responsibility of the student to attend classes regularly and to maintain a required level of scholastic standing.

The performance of a student in each course is assessed by the teacher by means of continuous

evaluation throughout the semester in classwork, periodical quizzes (sometimes unannounced), tests (both open and closed book), tutorials, laboratory work, homework, seminars, group discussions, project, etc., and a comprehensive examination at the end of the semester. The student is thereby given a large number of opportunities to carryout various academic assignments and be evaluated. Besides encouraging and rewarding continuous and systematic study, the system provides a constant feedback to the student as to where he/she stands, thus enabling him/her to cultivate regular habits of studying and preparing himself/herself for the future.

The system discards the conventional emphasis on a single final examination and numerical marks as the only absolute indication of the quality of student's performance. Thus, at the end of the semester the teacher of the course awards letter grades **A, A⁻, B, B⁻, C, C⁻, D, E** to the student based on the total performance of the student and it is relative to the performance of others taking the same course. These letter grades stand for quality of performance: A (Excellent), A⁻ (Very Good), B (Good), B⁻ (Above Average), C (Average), C⁻ (Below Average), D (Poor) and E (Exposed). Further, these letter grades have points associated with them in a quantified hierarchy: a maximum of 10 (for an A) to a minimum of 2 (for an E). There are also courses in which the teacher awards non-letter grades which have only a qualitative hierarchy. The teacher may also pronounce the performance of a student in a course in terms of certain reports which should not be misconstrued as grades.

Although BITS Pilani does not stipulate a minimum percentage of attendance before a student is permitted to appear in any test/examination, the Institute, being a fully residential university with internal and continuous evaluation system, expects every student to be responsible for regularity of his/her attendance in classrooms and laboratories, to appear in scheduled tests and examinations and to fulfill all other tasks assigned to him/her in every course. The system has adequate resilience to accommodate unforeseen situations through withdrawal from a course, make-up test, feedback from examinations and interaction with teachers. In spite of all these facilities when a student fails to cooperate with the teacher in the discharge of his/her part of the contract to such an extent that the teacher is unable to award any grade, the teacher is authorized to give a “Not Cleared” (**NC**) report.

A student is deemed to have cleared a course if he/she obtains a grade in the course. However, the educational philosophy of the Institute interlinks and at the same time distinguishes between the performance of a student in a single course and his/her overall cumulative performance. The overall performance of a student is indicated by an index known as the “Cumulative Grade Point Average” (CGPA). It is the weighted average of the grade points of all the letter grades received by the student since his/her entry into the Institute and is expressed on a 10-point scale. In the case of Integrated First Degree programmes the final division for the degree is decided on the basis of CGPA and there are three classifications, namely Distinction, First Division and Second Division. However, in the case of Higher Degree and the Doctoral programmes no division is awarded.

During the student’s stay in the Institute, the Institute expects him/her to show a certain minimum performance and progress. The minimum academic requirements regarding the performance and progress for the Integrated First Degrees and Higher Degrees are:

(i) A CGPA of at least 4.5 at the end of every semester for integrated First Degree students and 5.5 for Higher Degree/Ph.D. students.

(ii) Not more than one E grade in a semester for integrated First Degree programmes and no E grade in the Higher Degree programmes.

(iii) The pace of progress of a student should be such that at any stage of reckoning he/she should not have spent more than 50% extra time than what is prescribed for him/her upto that stage in his/her programme.

The Institute's Academic Regulations must be consulted regarding the minimum academic requirements for the pursuit of the Ph.D. programme and also for off-campus programmes.

Students who fail to meet the minimum academic requirements stipulated above are put

under an appropriate committee which monitors their programmes and give guidance so that they are properly rehabilitated at the earliest. In case of Ph.D., this is done by the Departmental Research Committee (DRC) and Doctoral Counselling Committee and in the case of Higher Degrees and integrated First Degrees this is done by Academic Counselling Board (ACB). These Committees are appointed by the Senate and are given authority to take appropriate action including discontinuance of the student or transfer to other programme.

FLEXIBILITIES

The admission policy and the educational process at BITS take care of multiple entry into the programmes and allow several other flexibilities.

Wherever a flexibility is possible according to the Academic Regulations of the Institute, the implementation of the decision invariably takes place along with registration at the beginning of a semester for the continuing students. As in the admission process, the decision is guided by the principle of merit, preferences and facilities available.

It is obvious that CGPA cannot serve as the only measure of merit when the total number of courses/units is different between two competing candidates. To normalize all competing candidates, generally the Institute uses a Progressive Branching Index (**PBI**).

Admissions in both the Semesters

The structural flexibilities available in the Institute make it possible to admit students in both the semesters. However, in the case of both First Degree and Higher Degree programmes most of the admissions are made during the first semester itself. In the case of Ph.D. and off-campus Degree programmes, admissions are planned in both the semesters. However, a separate advertisement is given for the second semester admissions and applications for the same are made available only after an advertisement is issued.

Admission with Marginal Deficiency

While the academic preparation required for the admission to each Degree has been clearly spelt out there is a provision in the Institute Academic Regulations whereby brilliant students whose prior preparation has been marginally deficient in terms of stated courses/subjects may also be admitted with the condition that they are required to do additional courses over and above those prescribed for a student with normal preparation and the sequence is determined by the institute. This flexibility is invariably used in the case of higher Degree programmes where students may come without sufficient exposure to courses like computer programming.

Admission with Advanced Standing

When a candidate for any programme in the three tiers of education of the Institute comes with a preparation beyond the minimum requirement for admission in that programme, the admission of such a candidate is handled under what is known as admission with advanced standing. While such admission is not available as a matter of right, at the time of admission the Institute would spell out in detail the advanced credit it proposes to give to the candidate and the matter would be handled within the framework of the Institute's operation for normal students. Essentially the guiding principle is two-fold: the courses the candidate has already done before entering the Institute cannot be repeated and also that the time spent elsewhere is not wasted. Such an open-ended situation is handled on a case by case basis. It is important that the candidate supplies all the pertinent data in respect of syllabus of courses taken by him/her, examinations passed, question papers of the examinations and the grades/marks obtained by him/her in different subjects. A candidate who is shortlisted for such admissions would be asked to come to Pilani and explore a workable programme that would be appropriate for him/her before admission is completed. If required, the candidate may have to take certain examinations in various subjects that he/she has completed before a prescribed programme is pronounced for him/her there onwards.

However, there are certain situations which cannot be treated as advanced standing. In view of the uncertainty of the level to which some of the courses of the First Degree programmes is treated as optional subjects in the 10+2 system, to be consistent with the past tradition, no student is allowed to register in a course if he/she

is considered to be overprepared in relation to the content of the course. Some examples of such courses are: General Biology, Engineering Graphics and Workshop Practice. Such an overprepared student is required to take an appropriate higher level course, as determined by the Associate Dean, Academic, Undergraduate Studies Division.

Dual Degree Scheme

The Institute has created facility by which any student who is admitted to M.Sc. programmes (offered under Group B) is offered a second degree in B.E programmes under dual degree scheme. This assignment is made on the basis of Progressive Branching Index (PBI) at BITS at the end of the first year, separately in Pilani, Goa and Hyderabad campuses.

Number of dual degree seats in any particular branch of engineering is decided by using following formula:

$$A = \frac{P \times Q}{R}$$

Where A is the number of dual degree seats in an engineering branch; P is the total number of students eligible for dual degree in science; Q is the number of engineering students admitted in an Engineering Branch in which number of dual degree seats need to be assigned; and R is the total number of students admitted in Engineering on the day of admission.

If any student is under the purview of ACB, his/her pursuit of the Dual Degree will be governed by the clause 7.02 of the Academic Regulations. He/She is required to maintain a minimum CGPA of 4.5 at the end of the fourth Semester failing which ACB may recommend withdrawal of the dual degree offer made to him/her.

Students in any other group seeking a second degree from amongst the programmes in the same group or another group will also be considered under 'other' priorities.

Transfer

(i) Within the same tier

It is possible for a student to seek transfer from one programme to another in the middle of a programme without starting from the beginning. This is possible because he/she is given credit for what he/she has done till then towards the requirements of the programme to which he/she seeks the transfer. Details have to be seen in the Academic Regulations. Transfer is possible from M.E. (all branches) and M.Pharm. to M.Phil. On the other hand, very restricted and tutored transfer would be possible from M.Phil. to M.E./ M.Pharm.

Since admission to a programme is done on assigned and competitive basis, there cannot be any scope of undoing the fact of an assigned admission through transfer. Thus only exceptionally meritorious students in a limited number of cases can expect to compete for transfer to a more sought-after programme. On the other hand, transfer to a less sought-after programme for a student who is unable to cope with the rigors of the programme in which he/she has been admitted would be readily used to rehabilitate him/her without much loss of time. In any event, transfer must be treated as an admission process.

(ii) From First Degree to Higher Degree / Ph.D. Degree:

In the case of bright and promising student of the Integrated First degree programmes a transfer to Higher Degree and/or Ph.D. degree may also be provided.

(iii) Between Ph.D. and higher degree programmes:

Under special situations a transfer between Ph.D. and higher degree programmes may be permitted. Movement in either direction is theoretically possible. The Institute's Academic Regulations must be consulted for details.

Audit

The facility of taking a course on audit is principally conceived to give an opportunity to a student to update his/her knowledge in selected courses. It is expected to meet primarily the needs of casual students (not enrolled for degree). No degree of the Institute can be acquired by merely taking courses on audit.

There are certain courses like Foreign Languages, Music, etc. which are neither part of a degree programme nor are available through electives. Any student who wishes to take such courses can take them only on audit basis and also on payment of additional fees.

Other Flexibilities

The structure of degree programmes and the Academic Regulations also provide certain other flexibilities like choice of electives, number of electives, repetition of courses, departure from normal pace, withdrawal from or substitution of course(s) etc.

Academic Regulations

The operations described above are not exhaustive. For precise rules, Academic Regulations of the Institute may be consulted.

UNIVERSITY-INDUSTRY LINKAGE

A recurring theme in the realm of educational reform and innovation has been that of linking university education with industry experience. Since its very inception in 1964, the Institute has been committed to University-Industry Collaboration. Beginning in 1973, the Institute has taken pioneering initiatives towards the development of institutionalized linkages with industry, through its (i) Practice School, (ii) Technology Innovation Center, and (iii) Off-campus work-integrated learning programmes. The details of Practice School are described here.

PRACTICE SCHOOL

All Integrated First Degree and Higher Degree Programmes of the Institute provide a Practice School option. A student who exercises this option receives, on successful completion of the requirements of the programme, a degree which carries the tag, “With Practice School”.

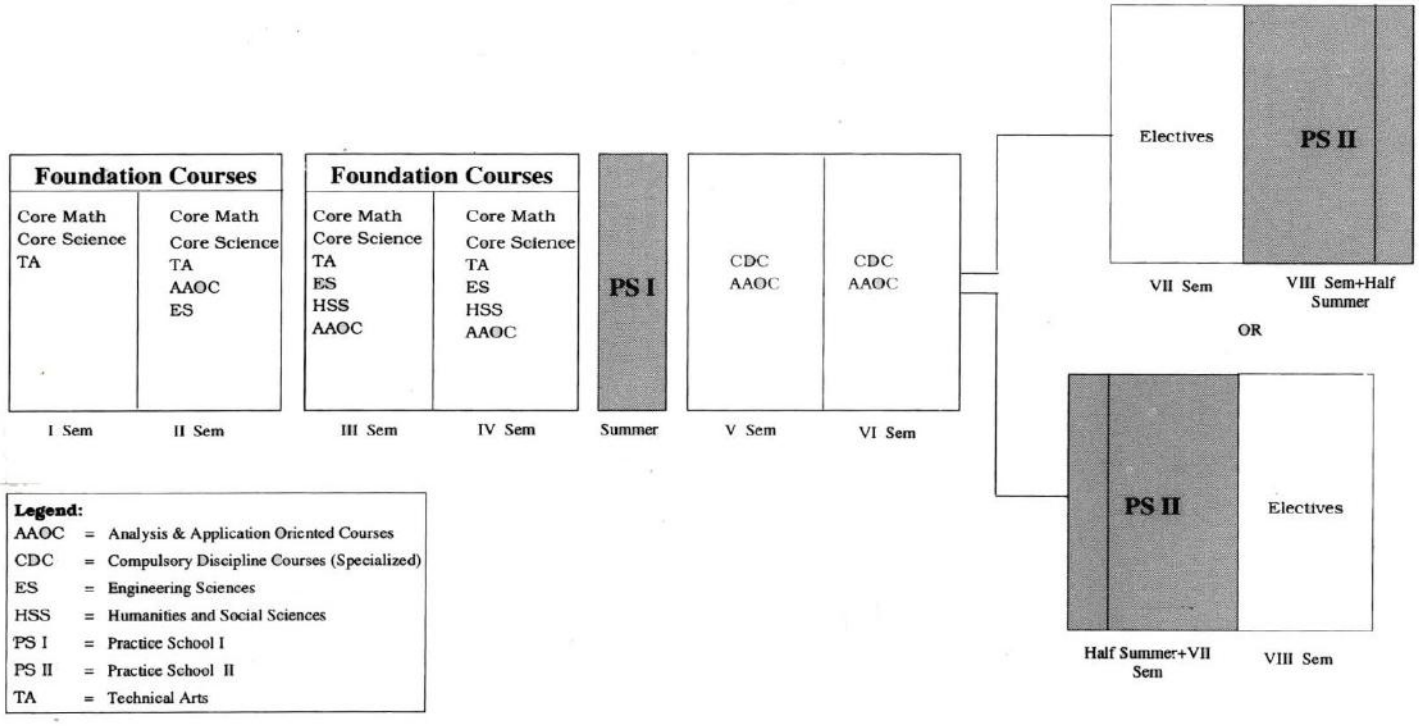
Theme

BITS is strongly committed to the view that university education must be oriented so as to (i) meet the rapidly changing needs and challenges of the environment, (ii) help people use their intelligence and become capable of facing unfamiliar, open-ended real-life situations, and (iii) bear an economic relevance to the society.

The Practice School (PS) method of education links the university with the professional world, by infusing the reality of the world of work into the educational process. The classroom is shifted for a period of 7½ months to a professional location where the students, under the supervision of the faculty, are involved in applying the knowledge acquired in the classroom to finding solutions to real life problems. The PS experiment began with a small group of 12 students in 1973 and has been extended to accommodate all students from all disciplines. The distinguishing features of the PS method of education - (i) the work of the students is supervised and evaluated by faculty, (ii) the credits earned by the student count towards the total credit requirement of the degree, and (iii) the PS option is available to students of all disciplines - make it a bold and radical educational reform with no parallel.

Operation of the PS Programme

The **PS** programme for the Integrated First Degree has two components, namely **PS-I** of two months duration implemented during the summer following the 2nd year and **PS-II** of five and a half months duration implemented during either of the semesters of the final year. (Refer to the chart on page II-12) Dual degree students can also opt for PS-II in both the semesters of the final year.



The Structure of Integrated First Degree Programme
(Practice School Option)

The **PS** Programme for Higher Degree has a single component, namely Practice School for Higher Degree operating in an identical fashion to PS-II, in the final semester of the Higher Degree Programme.

Practice School - I (PS-I)

This component is the first exposure to the world of work, necessary for the subsequent problem solving experience during PS-II. It is implemented at large industrial complexes, research and development centers, software development houses, pharmaceutical companies, etc. While the general aim of PS-I is to afford an opportunity for the student to learn how work is organized and carried out; by a process of observation and participation, the learning can be quite varied and exhaustive depending on the nature of the organization. It provides an opportunity for a detailed understanding of vast engineering operations and its various facets such as inventory, productivity, management, information systems, human resource development, etc. Students observe science and technology in action, develop an awareness of the method of scientific experimentation, and often get an opportunity to see, study and operate sophisticated and costly equipment. They also learn about the implementation of the principles of management they have learnt in class, when they observe multidisciplinary teams of experts from engineering, science, economics, operations research, and management deal with techno-economic problems at the micro and macro levels. Finally, it enables them to develop and refine their language, communication and inter-personal skills, both by its very nature, and by the various evaluation components, such as seminar, group discussion, project report preparation, etc. The broad-based core education, strong in mathematics and science and rich in analytical tools, provides the foundation necessary for the student to understand properly the nature of real-life problems. The students are accompanied by a teacher, who is responsible for coordination with the organization and the day-to-day educational as well as evaluation details.

Some of the places where this component has been implemented are Indian Institute of Petroleum, Dehradun; Rourkela Steel Plant, Rourkela; National Aluminium Company Ltd., Damanjodi; Indian Institute of Remote Sensing, Dehradun; The Institute of Minerals & Materials Technology, Bhubaneshwar; Texmaco Ltd., Kolkata; Central Leather Research Institute , Chennai; Century Rayon, Kalyan; Orchid Bio Medical Systems, Goa; Carborundum Universal Ltd., Kochi; Bharat Forge Ltd , Pune.

Practice School - II (PS-II)/ PS for Higher Degree

PS-II is attended by the students of the Integrated First Degree Programmes in their final year of study. This is also faculty supervised, and for this purpose, teachers are located at various centers around the country where PS stations operate. In order to maintain continuity of operation, the students are divided into two batches, about half the students doing PS-II in the first semester and the other half in the second semester. In either case, the time duration is augmented by a part of the summer term (preceding or following the semester). The operation is therefore round the year with batches coming about every six months. PS for Higher Degree is however available only in the final semester of the programme, after completion of the campus-based courses. The PS-II/PS component is implemented at Production and Manufacturing units, Design, Development and Consulting Agencies, Research and Development Centers, Financial Institutions, Software Development organizations, etc. The student education here is in terms of the direct involvement of the student in problem solving efforts of specific interest to the host organization. The assignments are identified by the PS faculty well in advance in consultation with experts from the host organization. The problems are often multidisciplinary in nature, which are assigned to a group of students drawn from different disciplines. The professional expert in charge of a particular problem and the PS faculty play the roles of consultant and supervisor respectively. The students are encouraged to work independently and are required to defend the technical aspects of their work through periodic written and oral presentations. Emphasis is laid on realizing the importance of teamwork, development of leadership qualities, and the need for effective time management.

Some of the typical assignments that the students have undertaken are: Development of

Category Configuration Portal; System on Chip Design and Verification; Design and Development of Features in the Mtg-Automation; Risk and Control Tools in Operations; Integrating HP Performance and HP Nonstop Measure; Planning and Implementing Events at ECLUB and Work at Resource Bureau; Partial Metadata Get/Set Support in CDMI Server; Sabre Cruises Booking Analytics Tool; Mobile Engineering at Pocket Gems; Data Management and Organizaion of Datasets.

Typical PS Station – A Model

The PS station is the analogue, in the professional world, of the university classroom and laboratory. The Institute endeavours to ensure that each PS station has all the physical facilities necessary to carry out meaningful education. In fact, host organizations have always come forward with all possible assistance. At least one faculty member is attached with each PS station. Since a city may have more than one PS station, the term PS Centre is used to designate a location where one or more PS stations are present.

PS Assignments

The general nature of PS-I assignments is of study and orientation. However, the assignment plays a pivotal role in PS-II and is of direct and immediate relevance to the host organization. The educational challenge is therefore that of evolving the pedagogy for teaching, learning, and evaluation while the students are involved in their problem solving efforts. The tasks are generally multidisciplinary, mission oriented and therefore time bound and open ended. The development of solutions to such problems requires a scientific attitude, technical competence, discipline and adherence to procedure, decision making ability, and a spirit of curiosity and exploration. Often, the assignments form a part of long term research and development projects.

Student Allotment in PS

Allotment in PS-I is done keeping the student's preferences and academic performance in view, along with the availability of physical facilities, in particular, accommodation. Student allotment in PS-II is, however, a much more complex and multi-dimensional task. With the help of the PS faculty, information about the total set of skills and attributes required of the student for the task at hand is collected from the host organization. Simultaneously, a profile of each student is prepared, incorporating details such as CGPA, performance in various categories of courses including electives and projects, assignment worked on in PS-I, professional interests, and extra-curricular achievements. With this information base, a matching is carried out, keeping in view the student's preferences and constraints of physical facilities.

Computerization of the various activities related to PS, such as profile preparation, allotment, monitoring, and feedback has made the entire process expeditious and efficient.

Evaluation in PS courses

The PS method of education, as has been emphasized earlier, is a medium for integrating real-life situations with the learning process. In line with this objective, the student is given the responsibility of planning, scheduling, implementing, and defending the steps to the solution of the assigned problem. The students work under the supervision of the faculty, in consultation with the professional expert(s). As with all other courses, a process of continuous evaluation is followed. The PS method of education seeks out and focuses attention on many latent attributes which do not surface in the normal classroom situation. These include professional judgment and decision making capacity, inter-disciplinary approach, data-handling skills, ability in written and oral presentation, leadership qualities, ability for team work, sense of responsibility, ability to meet deadlines, etc. These attributes are judged by the faculty through various instruments of evaluation, namely quiz, viva, seminar, group discussion, project report, diary, and daily observation. At the end of each PS course, a student is awarded a letter grade based on his total performance. Supplementing the degree transcript issued by the Institute, the PS Division issues a 'Practice School Transcript' to those students who opt for the PS stream. This transcript gives a complete record of the performance of the student in the PS programme. It also includes a rating sheet which describes qualitatively the student's personality traits mentioned earlier.

Since the PS programme interfaces with the world outside the campus, whenever the

progress of a student in a PS course is found to be unsatisfactory and/or guilty of conduct unworthy of the professional world, the PS option may be withdrawn by the Institute, without any reason being assigned.

Role of Professional Experts in PS

The PS programme clearly places demands on the time and energy of various officers from the host organization. However, every effort is made to ensure that they are not burdened with the day-to-day details concerning the educational and administrative organization of the PS programme, these being the responsibility of the PS faculty.

In the case of PS-I, the preparation of the educational schedule is initiated at the Institute itself. On reaching the PS station, the faculty discusses the same with officers from the host organization, seeking their concurrence and their suggestions. The faculty engages the students on various assignments and periodically informs the experts of the progress made. The faculty may also arrange meetings of the students with the experts and also invite them to participate in seminars given by the students from time to time. At the end of the course, the faculty seeks the expert's critical comments on the report submitted by the student, to receive essential feedback on the quality of the work.

In respect of PS-II, the officers from the host organization first come into picture when the faculty is compiling the problem bank for the batch of students to come. At this stage, the experts provide the details of the various problems on which the students will work, as well as their requirements in terms of the type of student input for each assignment. After the arrival of the students at the PS station too, the faculty remains at the helm of affairs, forming student groups, assigning projects, conducting evaluation components, etc. The faculty also ensures that each student blends well with the group of fellow students and staff from the host organization, in which he/she is working. When seminars or group discussions are held, the faculty invites the officers to participate. During the course of the assignment, the students seek consultation with the expert, normally through the faculty, who ensures that the student is well-prepared for these meetings. At the end of the course, the student is required to present a seminar and defend the technical credibility of the work before as large a gathering of experts as possible. Detailed discussions ensue on various technical aspects of the problem, often resulting in the resolution of critical issues involved.

Some PS Statistics

Ever since its beginning in the year 1973 with just one station accommodating 12 students and 4 faculty members, the PS has grown immensely. In the academic year 1975-76 the programme was thrown open to all the students of the Institute. During an academic year arrangements have to be made for PS programme for a steady number of 5637 students, accompanied by nearly 172 faculty members. Specifically, it means accommodating a steady number of 2944 students and 101 faculty members at about 415 different organisations for PS-I in the summer term and arranging for about 2693 students accompanied by about 71 faculty members to attend PS-II operated round the year at about 580 different host organizations. So far about 81282 students have been benefited by this programme. While all the host organisations pay the students out-of-pocket allowance, some organizations provide the students and the faculty with housing and other facilities as well.

The list of organisations where PS programmes are in operation is given below. There are also organizations outside India where the PS programme is being conducted for several years. (Refer to the following map showing PS Stations).

BITS PRACTICE SCHOOL STATIONS

LEGEND

● — PS 1 CENTERS

▲ — PS 2 CENTERS

LIST OF PS-I STATIONS

Ahmedabad

CSPL (CSPL), Silver Touch Technologies Ltd. (ST), Swami Vivekanand Gujarat Rajya Yuva Board- Research Policy and Copywriting (SVGRYB-RPC)

Ballabgarh

NCCBM (NCCBM)

Bangalore

Adarsh Control & Automation Pvt. Ltd- Industrial Automation (ACAPL-IA), Bharat Electronics Ltd. (BEL), Coffee Beans- AI (COFFEE BEANS), COUTURE AI - ML (CA), Cuemath-Business development (CUEMATH), Dhio Research (DHIO RESEARCH), Dybo (DYBO), Electrono Solutions (ES), Goavega Software India Pvt. Ltd.- Data Analytics (GSIPL), Habbit (HABBIT), Happiest Minds Tech. (HM), i-exceed Technology Solutions Pvt. Ltd. (ITSPL), Ineuron Intelligence - Artificial Intelligence (IIAI), LOGIQ LABS Pvt Ltd (LOGIQ LABS), MapmyIndia-Marketing (MAPMYINDIA), CSIR-National Aerospace Laboratories - VLSI Design/Circuit Design (NAL), Needl.ai- Data Analytics (NEEDL.AI), NetApp (NETAPP), Nihon Communication Solutions Pvt. Ltd. (NCSPL), NPBridge Solutions Private Limited (NPBSPL), Petasense Technologies Pvt. Ltd. (PTPL), Plastic Water Labs (PWL), Platifi Solutions (PS), Race2Cloud Technologies Pvt. Ltd. (RCTPL), Rashiv Cloud Solutions- Social media and research (RCS), Sawolabs (SAWOLABS), Swiggy - Software Development (SWIGGY), VoiceQube - Software Development (VOICEQUBE), William O Neil - Data Analytics (WILLIAM O NEIL

Bapatla

Andhra Pradesh Human Resource Development institute (APHRDI)

Bhilwada

Dynamic Elecpower (P) Ltd (DEPL)

Bilaspur

Prakriti Organics - Website Upgradation or enhancement (PO)

Budawada

Balaji Cement Works (BCW)

Chandigarh

Gates India Pvt Ltd - (GIPL),

Chandrapur

Awarpur Cement Works (ACW), Manikgarh Cement (MC)

Chennai

Carborundum universal Limited-Mechanical (CUL), Central Electronics Engineering Research Institute (CEERI), Central Leather Research Institute (CLRI), Hertztech Solutions Pvt. Ltd. - AI/ML (HSPL), Hertztech Solutions Pvt. Ltd. (HSPL), Hexacorp (HEXACORP), Indian Society for Education and Environment (ISEE), Madras Mindworks Pvt Ltd (MMPL), Mazo solutions- Analytics (MS), MELSS - Industrial Automation & Control (MELSS), MSys Technologies - Tech (MSYSTECH), Pipe Candy (PIPE-CANDY), PreludeSys (PRELUDESYS), Prodapt (PRODAPT), Purchasing Power - Web Development/UI Development (PP), ScoVelo Consulting (SVC), Sirius Motor Sports (SMS), Tamil nadu Startup & Innovation Mission-Strategy Consulting (TNSIMSC), TNSTC - Digital Content - Astronomy - App/AR/VR (TNSTC), Urjanet (URJANET)

Coimbatore

Caliber Interconnect Solutions Pvt. Ltd-Industrial Automation & Control (CISPL)

Dadri

NTPC (NTPC)

Dalla

Dalla Cement Works (DCW),

Dehradun

Indian Institute of Petroleum (IIP), Indian Institute Of Remote Sensing -(IIRS), Wadia Institute Of Himalayan Geology (WIHG)

Delhi

Agrix Agrotech Private Limited - Electronics (AAPL), AlmaConnect (AC), Arbunize Digital Media Pvt. Ltd (ADMPL), Army Base Workshop (ABW), CCS Strategy Solutions - Flexsim (CCS-SS), Centre for Development of Telemetics (CDOT), Centre for Railway Information Systems (CFRIS), CSIR-Institute of Genomics & Integrative Biology (IGIB), EFY Group New Delhi - Embedded Systems / IoT, (EFY GROUP), Erasmith Technologies Pvt. Ltd. (ETPL), Eupheus Learning (EL), Give India - Social Sector (GI), Good 2 Give - Social Sector ((G2G), Lakshyam NGO-General Management (LAKSHYAM), SAMIL (SAMIL), SenRa Tech

Pvt Ltd - Embedded Systems/IoT (STPL), Solar Energy Corporation of India (SECI), Hilti (India) Pvt Ltd. (HIPL), Indian Council for Research on International Economic Relations (ICRIER), Indian Institute of Public Administration (IIPA), Indian Oil Corporation Limited (IOCL), Indian Red Cross Society Blood Bank - Social Sector (IRCSBB), Integra Design (ID), IRCS (IRCS), Knowcross Solutions Pvt Ltd (KCSPL), Multigraphics Group (MG), Takshila Learning (TAKSHILA)

Faridabad

Medsupervision Pvt. Ltd (MPL), Ramco Steels Pvt. Ltd- Manufacturing (RSPL)

Gandhinagar

Arocom IT - Machine Learning (AROCOM), Bhaskaracharya Institute For Space Applications And Geoinformatic, (BISAG),

Germany

Green Gentem (GG)

Goa

Department of Agriculture (DA), Helix Tech Info Systems Pvt. Ltd. (HELIX), Helpage India Goa-Data Analytics (HELPAGE), National Centre for Polar and Ocean Research (NCPOR), National Institute of Oceanography (NIO), Persistent Systems Ltd. Verna - Machine Learning (PSL), Smartlink Holdings Ltd (SHL)

Gurgaon

Alankaar India Trust (AIT), Beunlu - Graphic Designing (BEUNLU), Convergent Technologies (CT), CrossBar (CROSSBAR), Engineers India Limited (EIL), Futures First Info Services Pvt. Ltd. (FFISPL), Instrumentation Solution (IS)

Halol

Aditya Birla Insulators (ABI)

Harihar

Birla Polyfibers (BP)

Hyderabad

Aizant Global Analytics- Software development (AGA), Akshara Livelihoods Private Limited (ALPL), Aliens Developers Pvt. Ltd (ADPL), Amritha Tool Crafts (ATC), Bintix Waste Research Pvt. Ltd. (BWRPL), Contenterra Software Private Limited (CSPL), Core Compete Pvt. Ltd. (CCPL), Data M Intelligence - Market Research (DMI), Department of Posts-Financial Inclusion (DPFI), Dinero (DINERO), G.M.R. Varalakshmi Foundation - Social Sector Dr.Reddy (DR), Electronics Corporation of India Limited - VLSI Design/Circuit Design (ECIL), GMR Varalakshmi- General Management (GMR), India Buys (INDIA-BUYS), Indian Red Cross Society (IRCS), LightSpeed AI Labs Pvt Ltd (LSALPL), NIC (NIC), NIRDPM (NIRDPM), Preto Tooling Systems (PTS), Redpine Signals India Pvt. Ltd. DBA Ceremorphic India Pvt. Ltd. (RSIPL), Roads and Buildings Department - Govt of Telangana (RBD-GOT), Shris Infotech Services Pvt. Ltd. (SISPL), Swecha (SWECHA), Synchrony International - Data Analytics (SI), Telangana e-governance (TG), Vasantha Tool Crafts Pvt Limited-Mechanical (VTCPL), Vidcentum R & D Pvt - Machine Learning/DSP/AI (VR&DPL), Yashoda Hospital (YH)

Indore

Greendeck Cliff.ai(GREENDECK), WeSwap Mobility Solutions (WSMS)

Jaipur

Celebal Technologies Pvt Ltd (CTPL), KEC International Ltd (KEC),

Jaypeepuram (MP)

Bela Cement Works (BCW)

Jodhpur

Birla White Cements (BWC), Chemical & Mineral Industries Pvt. Ltd. (CMIPL), Regional Remote Sensing Centre (RRSC)

Kalpakkam

Indira Gandhi Centre For Atomic Research (IGCAR)

Kolkata

Asanify Technologies (AT), Department of Technical Education Training & Skill Development (DTET-SD), VComply (VCOMPLY), WEBiROID Technology & Consultancy Services Pvt. Ltd (WTCSPL)

Kotputli

Ultratech Cement Ltd (UCL)

Kovaya

Gujarat Cement (GC)

Malkhed

Rajshree Cement Works (RCW)

Mexico

I Care Foundation (ICF)

Mohali

IDS Infotech Ltd - Data Science (IDS-IL)

Mumbai

Aditya Birla Science & Technology (ABST), Aecom Infrastructure (AECOM), Agile connect (AC), Cateina Technologies Pvt. Ltd. (CTPL), Century Rayon (CR), Development Consultants Pvt Ltd (DCPL), Expound Technivo Pvt Ltd (ETPL), Hindustan Colas (HC), Hindustan Petroleum Corporation Limited (HPCL), Homi Bhabha Centre For Science Education (HBCSE), Intercontinental Consultants & Technocrats Pvt. Ltd.(ICTPL), Kotak education (KE), L & T Infotech (L&T), Learning Mate (LM), MagTapp Technologies (MTT), National Stock Exchange (NSE), Pacify Medical Technology Pvt. Ltd (PMTPL), Prama Instruments Private Limited - Industrial Control & Automation (PIPL), Rebus Research (RR), The Diamond Factory (I) Pvt Ltd (TDFIPL),

Nagda

Grasim Industries Ltd. (GIL),

Nagpur

Malhar Industries (MI), Power Grid Corporation Ltd. (PGCL),

Nandyal

Nandi Group of Companies (NGC)

Nashik

DomTech Robotics & Automation (DTRA)

Neemuch

Vikram Cement Works (VCW)

Noida

Hyphen Supply Chain Solutions Pvt. Ltd (HSCSPL), IMARC Services Pvt. Ltd. - IT (ISPL), IMARC Services Pvt. Ltd. - Sectoral Study (ISPL) Million Sparks Foundation - Social Sector (MSF)

Ogli

Blue star Limited (BSL)

Pilani

CEERI (CEERI), Pilani AtmaNirbhar Resources Center (PARC)

Pune

AFour Technologies Pvt. Ltd. (ATPS), APS Lifetech (APSL), Aurum Smart Tech - DSP (AST), Bajaj Auto Limited (BAL), Bill Cloud Pvt Ltd (BCPL), Centre for Development of Advanced Computing (C-DAC), Chemsys Process Engineering Pvt. Ltd. (CPEPL), Coditation Systems Pvt Ltd (CSPL), Divgi TorqTransfer Systems Pvt. Ltd. - Bhosari (DIVGI), Hexanika (HEXANIKA), Knowzies Technology Solutions (KTS), Medcords (MEDCORDS), National Chemical Laboratory (NCL), ProIndia Healthcare - Operations Management (PROINDIA), ProIndia Healthcare (PROINDIA), Shalaka Connected Devices (SCD), SNS TECHNOSYS LLP (ANS-TL), STAR Engineers India (SEL), Suzlon Foundation (SUZLON), Viram Technologies Enterprises (VTE), Xarvis Intelligent Systems Lab Pvt Ltd (XISLPL)

Raipur

Rawan Cement Works (RCW)

Sahibzada Ajit Singh Nagar

Agnext tech (AGNEXT)

Secunderabad

Military College of Electronics and Mechanical Engineering (MCEME)

Shambupura

Aditya Cement Works (ACW)

Sidhi

Sidhi Cement Works (SCW)

Simga

Hirmi Cement Works (HCW)

Sirohi

Nathdwara Cement Works (NCW)

Solan (HP)

Baga Cement Works (BCW)

Srikalahasti

Andhra Pradesh Human Resource Development institute (APHRDI)

Surat

Big Scale tech- Mobile and Web Development (BST-MWD), Patch over Patch (POP), Praveen Laboratories Pvt. Ltd. (PLPL)

Thiruvallur

MTAB Engineers Pvt Ltd- Manufacturing (MEPL)

Tirora

Adani Power (APL)

Trivandrum

Kerala Infrastructure and Technology for Education (KITE), UST Global (USTG)

UAE

Americana Foods (AF)

Udaipur

E-Connect Solutions Pvt. Ltd. (ECSPL), Pyrotech Electronics Pvt. Ltd. (PEPL)

Umiam

North Eastern Space Applications Centre (NESAC)

USA

STEM4ALL-Mathematics (STEM4ALL), Village Book Builders Mapleton UT (VBBM),

Vadodara

Edutech Learning Solutions Pvt. Ltd. (ELSPL), SharedPro Technologies- Community Building (SPT-CB), Sub-Chemie India Pvt. Ltd. (SCIPL)

Vijayawada

Indian Red Cross Society - Social Sector (IRCS)

Vijaynagar

JSW Energy (JSW-E), JSW Steel(JSW)

Vijayawada

Indian Red Cross Society (IRCS)

Visakhapatnam

Andhra Pradesh Human Resource Development institute (APHRDI)

LIST OF PS-II STATIONS

Agra

PNC Infratech (PNC)

Ahmedabad

Adani Power (AP)

Ballabgarh

National Council for Cement and Building Materials (NCB)

Bangalore

Aditya Auto products & Engg (I) .P.Ltd. (ADITYA AUTO), Adobe Systems (ADOBE), Aerchain (AERCHAIN), Airmeet (AIRMEET), Altair Engineering India Pvt. Ltd Software Division (ALTAIR), Amazon Development Center (AMAZON), Analog Devices India Pvt. Ltd. (ANALOG), ARM Embedded Technologies Pvt. Ltd. (ARM), Asteria Aerospace Pvt. Ltd. (ASTERIA), Atkins (ATKINS), Avaamo (AVAAMO), Bambinos Learning solutions Pvt. Ltd. (BLSPL) Blue Jeans Network India Pvt. Ltd. (BLUE-JEANS), Blue Yonder (BLUE YONDER), Bombinate Technologies (BT), Bridge Your Network Inc (BYNI), Bundl Technologies Private Limited (Swiggy) Tech (BTPL-T), Capillary Technologies (CAPILLARY), Centre for Artificial Intelligence & Robotics (CAIR), Cisco Systems (India) Pvt. Ltd (CISCO) Cohesity Storage Solutions India Pvt. Ltd. (CSSIPL), Collins (COLLINS), Confluent India Pvt Ltd.(CIPL), Couture AI (COUTURE AI), CueMath Learn Pvt. Ltd (CUEMATH), Cypress Semiconductor India Pvt Ltd(CSTIPL), DataZymes Analytics (DATAZYME), Decision Resources Group (DRG), Dell Technologies (DELL), DHIO Research (DHIO-R), Dreamplug Technologies (DT), Dristi Technologies (DRISTI-T), Dunzo Digital Pvt. Ltd. (DUNZO), eGovernments Foundation (EGF), Eltropy (ELTROPY), Emptycup Innovation Pt. Ltd. (EIPL), Epsilon (EPSILON), Flipkart (FLIPKART), Founding Years Learning Solutions Pvt. Ltd. (FYLSPL), Genpact (GENPACT), Goldman Sachs India Pvt. Ltd. (GS), Goodera (GOODERA), Goscale Technologies Pvt. Ltd. (GOSCALE), Groww (GROWW), Harness (HARNESS), HealthCubed - Onsite (HEALTHCUBED), HelloThinkster (HT), Hevo Technologies India Pvt. Ltd. (HTIPL), IBM India Software Group (IBM), iDrive Capital (IDRIVE), Infinera (INFINERA), InMobi Business Analyst (INMOBI-BA), Intel - India Technology (INTEL), Invento Markerspaces Pvt. Ltd. (IMPL), IQVIA (IQVIA), John F Welch Technology Center (GE), JP Morgan Chase - Technology (JPMC), JPMS (JPMS), Kickdrum Technologies India Pvt. Ltd. (KICKDRUM), Knolskape Solutions Pvt. Ltd. (KNOLSKAPE), KPIT Technologies (KPIT), (KPMG (KPMG), Kredx (KREDX), LOGIQ LABS Pvt Ltd - eShipz.com (LOGIQ LABS), LTTS (LTTS), Marsview.ai (MARSVIEW), MathWorks

India Pvt. Ltd. (MATHWORKS), MBB Labs Pvt. Ltd. (MBB LABS), MediaTek Bangalore Pvt. Ltd. (MEDIATEK), Melio (MELIO), Mercedes Benz(MERCEDES), Mocxa Health Pvt. Ltd (MHPL), Morgan Stanley - Strats and Quant Role (MORGAN STANLEY), Myntra.com (MYNTRA), National Instruments Systems (India) Pvt. Ltd. (NISPL), NetApp (NetApp), Niyo Solutions (NIYO-S), nurture.farm (A Subisidiary of UPL Ltd.) (NURTURE FARM), Nutanix Technologies India Pvt. Ltd (NUTANIX), Nvidia Graphics (NVIDIA), NXP India Pvt. Ltd. (NIPL), Oyo Rooms-Tech (OYO ROOMS), PAYPAL (PAYPAL), Petasense - Services & App Development (PETASENSE), PharmEasy (PHARMEASY), Pilani Experts Technology Labs Pvt. Ltd. (TAPCHIF) Pixcy (PIXCY), Postman (POSTMAN), Qualcomm India Pvt. Ltd. (QUALCOMM), Qzense labs Pvt. Ltd. (QZENSE), Rakuten Inc (RAKUTEN), Retail commerce platform (RCP), Rupifi (RUPIFI) Samsung R & D Institute (SAMSUNG), Samsung Semiconductor India R&D Center (SAMSUNG-SEMI), SAP Labs (SAP-LABS), Sattva Media & Consulting Pvt Ltd (SMCPL), Signalchip Innovations Pvt. Ltd. (SIPL), Sugar Networks (SUGAR-N), Tejas Networks (TN), Tekion India Pvt. Ltd. (TEKION), Texas Instruments (I) Pvt. Ltd. Systems (TEXAS-S), Texas Instruments (I) Pvt. Ltd (TEXAS), Tibil Computer Solutions Pvt Ltd. (TCSPL), Toshiba Software India Pvt. Ltd. (TSIPL), Trane Technologies (TT), Truecaller (TRUECALLER), Tvami Technologies Pvt. Ltd. (TTPL), TVS Motors (TVS-MOTORS), Udaan (UDAAN), Verzeo Edutech Pvt Ltd (VERZEO), VMware Software India Pvt. Ltd. (VMWARE), Walmart Global Technology Services(WALMART), Wealthy (WEALTHY), Western Digital (SANDISK), William O Neil India Pvt Ltd (WONIPL), Zendrive India Pvt Ltd (ZIPL), Zeotap India Pvt. Ltd. (ZIPL), Zeta –Directi (ZETA), Zetwerk Manufacturing Businesses Pvt. Ltd.(ZETWERK), Zinnov Management Consulting Pvt. Ltd (ZINNOV), ZS Associates (ZS ASSOCIATES), Zwende Design Tech Pvt Ltd (ZWENDE)

California

Ascendo. AI (ASCENDO), , Glocol Networks - IOT and AI (GN)

Chennai

Amazon Development Center (AMAZON), Birla Carbon (BC), Central Leather Research Institute (CLRI), Enterpreneurship Development and Innovation Institute (IDII), Hertztech Solutions Pvt Ltd (HTS) Indium Software (IS), Lincoln Electric Company India Pvt. Ltd. (LECIPL), MEL Systems and Services Ltd (MSSL), MTAB Engineers Pvt Ltd. (MTAB-ENGG.), Paypal (PAYPAL), Pfizer Ltd.(PFIZER), REYNLAB Technologies India Pvt. Ltd. (RTIPL), TATA Communications Ltd (TCL), Vestas Technology Ltd. (VESTAS), ZF Wabco (ZF WABCO)

Cochin

IQVIA (IQVIA)

Coimbatore

Zetwerk Manufacturing Businesses Pvt. Ltd. (ZETWERK)

Dehradun

Indian Institute of Petroleum (IIP), Indian Institute Of Remote Sensing (IIRS)

Delhi

Amazon Development Center (AMAZON), Camp K12 (CAMP-K12), CL Educate Ltd.(CLEL), DMI Finance Pvt. Ltd. (DMI-FIN), Grey Orange Robotics Pvt. Ltd. (GORPL), Insights Alpha (IA), Intercontinental Consultants and Technolocrats Pvt. Ltd. (ICTPL), MapMyIndia (MAPMYINDIA) National Council of Applied Economic Research (NCAER), National Institute of Science and Tech. Dev. Studies (NISTADS), SiA Digital Consultancy India Pvt. Ltd. (SDCIPL), Young Man India (YMI)

Faridabad

Ramco Steels Pvt. Ltd. (RSPL)

Gajraula (UP)

RACL Geartech Limited(RACL-GL)

Guduvanchery

Rane TRW Steering Systems Pvt Ltd.(RANE-TRW)

Gurgaon

Alma Connect (ALMA-CON), American Express Enterprise Digital & Analytics (AE-EDA), ANS Commerce (ANS-COM), Apollo Tyres (APOLLO-T), Atkins (ATKINS), Capgemini Technology Services India Pvt Ltd.

(CTSIPL), Class 21A Pvt. Ltd. (CLASS-21A), Crossbar (CROSSBAR), Future First - Financial Market & Research (Non-Quant) (FUTURE-FIRST), Instrumentation solution (IS), IQVIA (IQVIA), Kochar Tech (COCHAR-T), OfBusiness (OF-BUSINESS), OYO Tech (OYO), PayU (PAYU), Process Nine Technologies Pvt Ltd (PNTPL), Ramboll India Pvt. Ltd. (RIPL), Rivigo Tech (RIVIGO), Snap Deal (SNAP-DEAL), Sona Comstar (SONA-COM), Urban Company (UC), VenueMonk (VENUEMONK), Zinnov Management Consulting Pvt. Ltd(ZINNOV)

Haridwar

Automat Irrigation Pvt. Ltd.(AIPL)

Harihar

Grasim Polyfiber (GP)

Hosur

Genau Extrusions Ltd. (GEL), Titan Industries Ltd. (TIL), TVS Motors (TVS-MOTORS)

Hyderabad

A - Eye Soft Labs Pvt. Ltd (AESLPL), Alien Developers (ALIEN-DEV), Amazon Development Center (AMAZON), Apple India Pvt Ltd. (AIPL), Arup India Pvt. Ltd. (ARUP-INDIA), Blue Yonder (BLUE-YONDER) Brane Enterprises Pvt Ltd (BEPL), BSCPL Infrastructure Ltd. (BSCPL-INFRA), CASHe (CASHE), CuraTeQ Biologics Private limited (CTBPL), Dr. Reddys Laboratories (DRL), Flyboat (FLYBOAT), GenY Medium (GENY-MEDIUM), Granules India Ltd. (GIL), Indian School of Business (ISB), John F Welch Technology Center (JFWTC), JPMC Corporate Analyst Development Program (JPMC), KFin Technologies Private Limited (KTPL), Matdun Labs (ML), Micron Technologies India Operations (MICRON-TEC), Microsemi India Pvt. Ltd. (MIPL), Mindshire Consulting (MC), My Smart Price - Non Tech (MSP), Nvidia Graphics (NVIDIA), OYO Tech (OYO), PAYPAL (PAYPAL), Petasense Technologies Pvt. Ltd (PETASENSE), Plastic Water Labs (PWL), Qualcomm India Pvt. Ltd. (QUALCOMM), RCI DRDO (RCI-DRDO), Reild Residential Properties Pvt. Ltd (Tech) - Asset Monk (RRPPL), Reynlab Technologies India Pvt. Ltd (RTIPL), Rite Infotech Pvt. Ltd (RIPL), Saras Analytics (SARAS), Securework (SECUREWORK), Servicenow Software Development India (SSDI), Silicon Laboratories Inc. (SI), Synchrony (SYNCHRONY), Techmojo (TECHMOJO), Teradata India Pvt. Ltd. (TIPL), TTEC Digital Analytics India LLP (TTEC-DAI), Uber (UBER), Voziq India Pvt. Ltd. (VIPL), Wavelabs Technologies (WT), Women Development &Child Welfare Department (WDCWD), Xilinx India Technology Services Pvt. Ltd. (XITSPL)

Indore

Techture Structures (TS)

Islant

Woodstock Fund (WF)

Jaipur

Amazon Operations (AMAZON), CEG Limited (CEG), NBC Bearings (NBCB),

Jodhpur

Zetwerk Manufacturing Businesses Pvt. Ltd. (ZETWERK)

Kalpakkam

Indira Gandhi Centre for Atomic Research (IGCAR)

Kancheepuram

Rane (Madras) Limited (RML)

Kolkata

Asanify Technologies Pvt. Ltd. (ATPL), Texmaco Rail & Engineering Ltd. (TEXMACO)

Ludhiana

ALW Lighting India Pvt Ltd (ALW-LIPL)

Mumbai

Aditya Birla Science & Technology Company Ltd (ABSTCL), Aecom (AECOM), Agami Realty (AR), Amazon Operations Manager (AMAZON), (Credit Suisse (CREDIT SUISSE), DBOI (DBOI), Development Consultants Pvt. Ltd. (DCPL), Dolat Capital (DC), Dorsch Consult (India) Pvt. Ltd. (DORSCH CONSULT), HCL Technologies Ltd. (HCL), Hindustan Colas Pvt Ltd (HCPL), J P Morgan Services (JPMS), Kwick Living (I) Pvt Ltd (KLIPL), L & T Infotech , Pan India (L&T-INFO), Maxwell Energy Systems Pvt Ltd (ION Energy) (MESPL),

Morgan Stanley Advantage Services (MSAS), Morningstar (MORNING-STAR), MSCI (MSCI), Nomura (NOMURA), Piramal Group (PG), Qure.ai (QURE.AI), R D Consultants (RDC), Receivables Exchange of India Limited (REIL), Symphony Fintech Solutions Pvt. Ltd. (SYMPHONY), UBS Group Compliance(UBS), UPGRAD (UPGRAD), Credit Suisse-Investment Banking and Capital Markets (CREDIT SUISSE)

Nagda

Grasim Industries Ltd (GRASIM).

Nagpur

Kizora Software Pvt. Ltd. (KSPL),
Techture Structures Pvt Ltd. (TS)

Noida

Adobe Systems (ADOBE), ASA Industries (AI), Bisquare Systems Pvt. Ltd. - Onsite (BISQUARE), Eightfold AI India Pvt Ltd (EAIPL), IMarc Services (IMARC), NXP Semiconductor (NXPS), One97 Communications (PAYTM), Qualcomm India Pvt. Ltd (QUALCOMM)Time Tooth (TT)

Pilani

Central Electronics Engineering Research Institute (CEERI), Pilani
AtmaNirbhar Resource Center (PARC)

Pondicherry

Lucas TVS Ltd. (LUCAS TVS),

Portland

Versa Cloud ERP Inc (VCEI)

Pune

AFour Technologies (AFT), AgroStar (AGROSTAR), Amazon - Operations Manager (AMAZON), Bharat Forge Ltd (BFL), Bitmapper (BITMAPPER), BNY Mellon Technology (BNY-MT), Credit Suisse (CREDIT SUISSE), DBOI (DBOI), Dell Technologies (DELL), Divgi TorqTransfer Systems Pvt. Ltd. (DIVGI), Energy Exemplar (EE), HealthRx by Bajaj Finserv Health Ltd. (HEALTHRX), Hexanika Pvt Ltd (HEXANIKA), IBM India Software Group (IBM), Integrated Active Monitoring Pvt. Ltd. (IAMPL), Johnson Controls (JC), Leameng Solutions (LS), Markets & Markets (M&M), National Chemical Laboratory (NCL), Nutanix Technologies India Pvt Ltd. (NUTANIX), Nvidia Graphics (NVIDIA), PharmaACE (PHARMAACE), Quick Heal Technologies Ltd. (QHTL), Reflexis Systems India Pvt Ltd(REFLEXIS), Sedemac (SEDEMAC), VMware Software India Pvt. Ltd. (VMWARE), Whirlpool (WHIRLPOOL),

Renukoot

Birla Carbon Limited (BCL)

Singapore

Zluri (ZLURI)

Texas (USA)

Resolvity Inc. (RI)

Udaipur

Vedanta Group (VG)

Vadodara
LTTS (LTTS)
warangal

Pragathi Developers (PD)

RESEARCH AT BITS

Research is an important academic activity at BITS Pilani. Large number of students at all levels of the educational programmes are involved in research that exploits the multidisciplinary educational base emerging out of the broad-based integrated education in engineering, science and humanities. Strong emphasis is laid on interdisciplinary, mission-oriented and relevant research. The Practice School, which is an important component of the integrated programmes of BITS Pilani, provides an opportunity to identify research problems relevant to industrial needs. The participation of students and the faculty members in research ensures a team effort towards problem solving activities. Such a total involvement of the faculty as well as the student population integrate research and teaching activities of the Institute in such a manner that they draw strength and support from each other.

Research Areas

Topics of Research can be chosen from any of the disciplines in which the Institute offers Higher Degree and First Degree programmes and also from the areas given in Table at the end of this Part.

Research Linkages

The Institute has built up research linkages with a large number of R & D organizations in the country and abroad and provisions exist for candidates to work for a part or whole of the research work at these organizations in their thrust areas. Some of the organizations are: Uniformed Services University of Health Sciences, Bethesda, USA; Tata Institute of Fundamental Research, Mumbai; Central Electronics Engineering Research Institute, Pilani; Central Drug Research Institute, Lucknow; Institute of Pathology, New Delhi; Sankara Nethralaya and Elite School of Optometry, Chennai; LV Prasad Eye Institute, Hyderabad; and Institute of Cardio-Vascular Diseases, Chennai.

Research Components in the Educational Programme

Research is emphasized in all the educational programmes of the Institute. At the first degree level, Thesis and at the higher degree level Dissertation are optional alternatives to the Practice School. Thesis is an integral component of the Ph.D programme.

While some salient features are described below, for further details, please refer to Academic Regulations.

(A) First Degree

(i) In the First tier, a single degree student must take either Thesis or PS and a dual degree student has to normally do Thesis for one degree and PS for the other degree. Such a student can also opt for PS/Thesis for both the degrees.

(ii) Students will be assigned a topic of research and a supervisor after giving due consideration to the student's preference, the research goals of the Institute and the equalization of the work-load of the supervisors.

(iii) A first degree student opting for a Thesis has two options: (i) register for a 16-units Thesis, in which case the student cannot be simultaneously registered in any other course; or (ii) register for a 9-units Thesis, in which case it may be necessary for the student to take additional elective courses to meet graduation requirements and He/she may be permitted to register in courses simultaneously with the Thesis

(iv) Thesis is graded in terms of same letter grades.

(v) Thesis can also be done at collaborating organization, industries under joint supervision.

(B) Higher Degree

For students who opt out of Practice School, Dissertation of 15-25 units is a required component. Student may be registered for one full semester after completing all courses or may be registered concurrently for varied units along with other courses. This is a course in which the student takes up a research topic under the supervision of a faculty member(s). Pursuit of research through this course in any semester must end up in a written report at the end of the semester. The performance is graded in terms of same letter grades. Dissertation can also be done at collaborating organizations, industries under joint supervision.

(C) Ph.D. Degree

Thesis is an integral component in the Ph.D. Degree programme. It requires a minimum of 40 units to be distributed normally across four semesters. A Ph.D. student can register for the Thesis course only after passing the Qualifying Examination and after approval of his topic of research and supervisor(s) by the Dean, Academics (Graduate Studies and Research).

The pursuit of the thesis can be on the campus or at Practice School Centres and in certain circumstances at other specific centres with prior permission.

Other Components and Features of the Ph.D. Programme

(i) Types of Input

While the preferred input is a Higher Degree of BITS Pilani or its equivalent, the Institute's Academic Regulations permit an input which is at least a first degree of BITS or its equivalent or any input between these two extremes. Further, in a rare case of a person of high professional standing and proven competence who is deemed to have acquired mastery over all or substantial part of the course-work of a Higher Degree of the Institute through long professional

experience exhibited through published papers, technical reports, etc. would also be an acceptable input.

(ii) Qualifying Examination

Every student admitted to Ph.D. must pass the qualifying examination which is based on two areas chosen by the candidate depending on his intended area of research and courses done. The qualifying examination tests the student's knowledge, grasp of fundamentals and his ability to use them in unknown situations.

The admission to On-campus Ph.D. programme is provisional in the first instance and gets confirmed only after passing the Qualifying examination within the prescribed time. Whenever a candidate is unable to pass the qualifying examination within the prescribed time, he will automatically be discontinued from the programme.

(iii) Seminar / Independent Study

Normally a Ph.D. student will have to register every semester in the Seminar course or in the Independent Study course.

(iv) Course work

The various categories of courses including Research Methodology, for the whole possible range of input of Ph.D. students are described in the Academic Regulations. In most cases, the course work consists of courses which are required for obtaining the knowledge in the area of research. Further, the qualifying examination is conducted on the basis of chosen two sub-areas approved by the Senate

(v) Research Methodology and Teaching Practice

Research Methodology course is done in semester/term following the semester of passing the Qualifying Examination. This course is designed to impart training in analysis of research problem, mathematical and statistical analysis of data, experimental techniques etc. Teaching Practice I or when it cannot be arranged, its alternative Practice Lecture Series-I is done in the semester/term following the semester of passing the Qualifying Examination. These courses attempt to train a Ph.D. student in the art, methodology and skill of teaching, communication, etc.

(vi) Language Requirement

The foreign language is prescribed as an eligibility requirement for the Ph.D. only when the supervisor(s) and/or the Dean, AGSRD approve the same. Otherwise English or an Indian language, as the case may be, would suffice.

A Ph.D. student for whom foreign language is prescribed is expected to demonstrate an ability to translate a piece from current periodicals in the area of major interest of the student in one of the modern European languages into English with the help of a dictionary.

(vii) Fellowships and Scholarships

Students admitted to Ph.D. Programme normally get fellowship from some funding agencies like UGC, CSIR, DBT, DST, ICMR, MNES or Industries, etc. However, Institute has also instituted fellowship stipends from its own resources intended to take care of the needs of Ph D students.

Ph.D. programme for working professionals

The Institute also offers an unique opportunity for employed professionals working in industries and R&D Organizations and having experience to work towards Ph.D. degree of the Institute. Such students can be admitted either under 'Part- Time' Ph.D. or under 'Ph.D. aspirants' scheme. While the 'Part- Time' Ph.D. students will work on the thrust area(s) identified by the Institute, a “Ph.D. aspirant will work in the settings of their respective work environments. Normally candidates working in an organization collaborating with BITS Pilani are considered under Aspirant scheme. Industries or organizations interested in the scheme for the development of their manpower at the Doctoral level are invited to seek collaboration with BITS and sponsor their suitable candidates.

A PhD candidate has to choose a BITS Pilani faculty as supervisor. However, co-supervisor may be chosen from the other organization.

Admission

The admission modalities given in the next part also apply to Ph.D. wherever applicable.

Eligibility

* A candidate with a formal Higher Degree which is the minimum qualification for the Ph.D. programme; namely M.E./ M.E. (Coll.)/ M.Phil./ M.Phil. (Applied)/ M.Pharm./M.Tech. of BITS or an equivalent Degree of another university of standing.
* A person of a long and high professional standing and proven competence not possessing a Higher Degree but whose experience, in terms of professional documents, can measure upto a Higher Degree.
* A student coming after clearing the courses prescribed by Departmental Research Committee of the Institute or its equivalent without completing the Degree.

There may be occasions where the admissions of Ph.D. Aspirants end up in protracted correspondence. If the admissions are finalized before the starting of the semester the students will be registered in that semester. Otherwise the admission will be deferred to a subsequent semester.

All 'Ph.D. Aspirants' after passing the qualifying examination shall seek formal admission to the Ph.D. programme at the earliest opportunity available to them and register in the Ph.D. Courses.

Components of Ph.D. Programmes

The components are (a) Course work, (b) Qualifying Examination; (c) Foreign Language, when required; (d)Research Methodology (e) Teaching Practice/Practice Lecture Series; (f) Seminar/Independent Study; and (g) Ph.D. Thesis.

Operational Features

a) Place of work: On-Campus: Any of the BITS Campuses. Off-campus Centre: Any location, where Practice School, Work-Integrated Learning programmes are con-ducted and organizations having collaborations and research linkages with BITS.

Outside Centre: In worthy circumstances, an outside centre not covered by the above may be approved.

b) Topic of Thesis: From the areas of focus of the Institute or from problems of intimate concern to the in-house R & D needs of the host organization and matching with focus of the Institute.

c) Supervisor: Subject to final approval by the Dean, AGSRD, any regular assistant professor and above of BITS Pilani with standing, authority or competence can become the supervisor for the Ph.D. thesis. However, as per requirement, one or more persons may be approved as co-supervisor for a PhD student. A person from other organization with adequate research credentials can become co-supervisor.

d) Places and Dates of Qualifying Examination: Normally arranged and announced twice in each year at all campuses of BITS.

Areas of Research

1. **Biological Sciences:** Environmental Biotechnology, Bioinformatics, Microbial Biotechnology, Molecular Biology, Molecular Parasitology & Vector Biology, Molecular Diagnostics, Genomics, Plant Biotechnology.

2. **Bioengineering**: Biomaterials, Biomechanics, Bioinstrumentation, Bio-transport Process.

3. **Civil Engineering**: Structures, Water Resources, Geotechnical, Transportation, Environmental Engineering, Image Processing and G.I.S., Disaster Management, Earthquake Engineering, Solar Architecture, Finite Element Method, Non-traditional optimization algorithms, Artificial Neural Networks, Fuzzy Logic and Multicriterion Decision Making and their applications.

4. **Chemical Engineering:** Biochemical Engineering, Biomass Gasification, Computation Fluid Dynamics, Energy Engineering, Environmental Engineering, Evolutionary Computation, Modeling and Simulation, Multi-Objective Optimization, Multiphase Reactors, Process Dynamics and Control, Process Integration and Process Intensification, Reaction Engineering, Polymer Science and Engineering, Process Synthesis and Design, Separation Processes and Petroleum Refining and Petrochemicals.

5. **Chemistry:** Organic including Natural products, Bioorganic, Inorganic, Bioinorganic, Physical, Biophysical, Medicinal, Analytical, Green, Theoretical and Computational Chemistry; Nanomaterials; X-Ray Crystallography.

6. **Computer Science & Information Systems:** Computer Networks, Distributed Systems, Database Systems, Software Engineering, Operating Systems, Multimedia, Computer Control Systems, Computer Architecture, Compilers, Formal Methods, Information Retrieval.

7. **Economics and Finance**: Macroeconomic Models and Policy, Microeconomic Analysis, Money and Financial Markets, Financial Engineering, Econometric Studies, Financial Modeling, Mathematical Economics, Environmental Economics, Resource Management Systems, Growth Economics, Banking, Micro Finance, Capital Markets, Macroeconomic Modeling, Applied Finance, Environment and Resource Economics International Trade and Finance, Strategy, Financial Management, Corporate Planning, Entrepreneurship, Project Management.

8. **Electrical and Electronics Engineering:** Communication Systems, Wireless and Mobile Ad-hoc Networks, Optical Communication and Networks, Microelectronics and VLSI Design, Signal Processing and Embedded Systems, Power Electronics and Drives, Power Systems, Telecommunication, Robotics and Intelligent Systems, Fiber Optic Sensors, Artificial intelligence techniques in robotics, Instrumentation & Control, Wearable computing, Energy and Power Systems.

9. **Humanities and Social Sciences:** Film Studies, Music, Theatre, History and Politics, Language, Communication and Soft Skills, Literature and Cultural Studies, Comparative Indian Literature, ELT, Media Studies and Advertisement, Ethics and Indian Philosophy, Psychology, Public Policy, Public Administration and Development Studies, Urban and Landscape Studies, Digital Humanities, Journalism, Tourism and Travel, Sociology, Philosophy, Ethics, Higher Education, Spiritual Intelligence, Development Studies, Computer- Mediated Communication, Technology Enabled Learning / Education.

Areas of Research

10. **Mathematics:** Coding Theory, Cryptology, Algebraic Geometry, Parallel Computing, Fuzzy Logic and its applications, Water pollution, Mathematical Modelling, Nonlinear functional analysis, Computational fluid dynamics, Optimization, Operations Research, Mathematical Biology, Differential equations, Fractional Calculus, Dynamical System, Epidemiology.

11. **Mechanical Engineering:** Product Design and Development, Manufacturing Engineering, Manufacturing Excellence Practices, Design Engineering, Materials Engineering, Fracture Studies, Non-destructive Testing, Robotics and Intelligent Systems, Nano Technology, Thermal Engineering, Energy Systems Engineering and Energy Management.

12. **Management**: Indian Management Practices, Management Practices in MNC, Cross Cultural Management, Performance Appraisal, Strategic Marketing, Retail, Brand Management, Clustering Methodology, Strategy, Sustainable Development, Evolving Capitalism& Regulations, Project Management, Production Management, Facility Layout Planning, Application of TOC in Operations Management, Supply Chain Management, R&D Management, R&D Performance Measurement, Technology Management, ERP, MIS, E-business, Image Processing, Risk Management, Capital Markets, Quantitative Methods, Business Modeling, Stochastic Modeling of Production Systems, Reliability Analysis & Modeling, Organizational Behavior, Positive Health Psychology, I/O Psychology, Indian Psychology, Innovation and Creativity, Negotiation Skills, Managerial Skills, Entrepreneurship and Health Care Management.

13. **Pharmacy**: Drug Design, Synthesis and Screening of New Bioactive Molecules, Drug Delivery Systems, Phytochemistry and Natural Drugs.

14. **Physics**: Materials Physics; Condensed Matter Physics; Nuclear, Particle and High Energy Physics; Optics & Spectroscopy.

15. **Interdisciplinary Research:** Nanotechnology and nanoscience, Nano-robotics, Micro-electro-mechanical systems (MEMS), Nanomaterials, Mechatronics, Waste, Water and Energy management

16. **Educational Innovation and Institutional Development**

***Respective Department HOD's may be contacted for further information**

PART III
ADMISSION MODALITY

ADMISSION MODALITY

Admissions are made on an all India basis. English is the medium of instruction for all the programmes in the Institute. Selection is based entirely on candidate's merit, his/her preference, facilities available and availability of seats. Some details of admission modality for all the three tiers of education are described in the following paragraphs.

INTEGRATED FIRST DEGREE PROGRAMMES

Admissions will be made purely on merit. The merit position of the candidate will be based on the score obtained by the candidate in a computer based Online Test (BITSAT) conducted by BITS, Pilani.

Eligibility for admission:

For admission to all the integrated first-degree programmes candidates should have passed the 12th examination of 10+2 system from a recognized Central or State board or its equivalent with adequate proficiency in English. Except for admission to B. Pharm. the candidates should have Physics, Chemistry, and Mathematics as subjects. For admission to B. Pharm., candidates should have Physics, Chemistry, and either Biology or Mathematics as subjects.

The candidate should have obtained a minimum of aggregate 75% marks in Physics, Chemistry and Mathematics subjects (if he/she has taken Mathematics in BITSAT) or a minimum of aggregate 75% marks in Physics, Chemistry and Biology subjects (if he/she has taken Biology in BITSAT) in 12th grade examination, with at least 60% marks in each of the Physics, Chemistry, and Mathematics / Biology subjects.

For **BITSAT–2021,** candidates who fulfill the following conditions are eligible to appear:

- Students appearing for 12th grade examination in 2021.
- Students who have passed the 12th grade examination in 2020 provided they explain the reasons for the gap. The admissions committee will examine all such cases before taking a final decision on their eligibility.
- Students should have taken Physics, Chemistry, and either Mathematics or Biology (PCM/PCB) subjects in 12th class.

Note:

1. Students should have appeared in/ passed the 12th examination of the 10+2 system from a recognized Central/ State board.
2. Students who are presently studying in BITS at any of its campuses are NOT eligible to appear in BITSAT.
3. The Institute considers only the latest performance through a public examination for admission. If the results of the latest examination are not available within the due date for submission of application, the candidate will not be considered even if there are some earlier performances of 12th class or its equivalent or any higher examination available with him/her. If a candidate has taken more than one attempt in 12th class or its equivalent, only his latest performance is considered, provided this attempt has been for the full component of subjects/courses prescribed.

The mechanism of admission procedure through BITSAT:

(i) Applying for admission:

All candidates who have appeared in BITSAT-2021 and are interested in admission will be required to submit application forms with 12th class marks and programme preferences during August 10, 2021 to August 21, 2021.

(ii) Preparation of Merit List for Admission:

The merit position of all eligible candidates (i.e., those who have appeared in BITSAT-2021 and have submitted application form for admission in the prescribed format with 12th marks, preferences and the required fees) will be prepared on the basis of their total scores in BITSAT-2021.

When the BITSAT score of two candidates are the same:

- First their scores obtained in Mathematics/Biology in BITSAT will be considered for separating them.

- If the tie still exists, then their scores in Physics in BITSAT will be considered for separating them.
- Further tie is eliminated using their scores in Chemistry in BITSAT.
- Finally, their PCM total marks in 12th examination will be considered for their separation.

The candidates have to fill only a single application form for seeking admission to all MSc and Engineering degree programmes offered at Pilani, Goa and Hyderabad campuses. Candidates have to fill a separate form for seeking admission in B. Pharma.The candidate's order of preference for different programmes offered at Pilani, Goa, and Hyderabad campuses of the Institute is processed through a computer software and the offers are made accordingly. This may take a few iterations and at each stage, the status is made available to the candidates at the Institute's website www.bitsadmission.com through Internet.

For a candidate to remain in the race, it is mandatory that the following conditions are fulfilled and strictly adhered to by the candidate:

(i) The Data provided by the candidate in the application form with respect to the candidate's background, academic performance, and order of preference for various degree programmes etc. is final.

(ii) The required fees as mentioned in the communication from the Institute are paid in advance and the candidate does not raise any new arguments in this connection.

(iii) A candidate, when offered provisional admission/ placed on waiting list, can choose to remain in the competition or withdraw from the competition within the stipulated deadline, details of which will be made available on the website.

Any candidate who seeks to alter the above conditions in the middle of this process is liable to disqualify himself/herself and forfeit fee as per Institute rules. See the section on 'Advance Fees, Refund and Forfeiture of Fees' later in this part.

(iii) The Actual Mechanism of Admission:

The facilities of the Institute are pronounced invariably in terms of the ratio of seats allotted between the different programmes rather than in terms of a fixed number of seats. The total number of admissions made may vary from year to year. The change in the total number of seats takes place primarily to adjust to the requirements of a highly flexible system which accommodates dual degree, transfer, etc.

In order to reduce the number of iterations, based on earlier experience and on a statistical projection of the responses received, the Institute might make admission offers to a larger number of candidates than the number of seats earmarked.

The computer is programmed to assign the seats starting from the first candidate on the merit list and going down the same until all seats are filled up. At any time when the computer considers a candidate, it first tries to accommodate the first preference of the candidate and goes to his/her second preference if his/her first preference could not be accommodated and so on. Assignments for all programmes are thus completed and immediate admission offers are made.

Based on our past experience, a certain number of candidates would be placed on waiting list. Whenever vacancies arise, the procedure of assignment would be exactly the same as described above. During each iteration, a *de novo* assignment starting from the first candidate in the merit list will be made. Of course, in this operation, candidates who have declined the offer and/or who have not paid fees would be removed from the merit list. It is now clear that in this process not only some of the candidates who are on the waiting list will get an assignment but also certain students who have already got an assignment may now get a new assignment to one of their higher preference if seats are now available. The waiting list of the Institute has the following characteristics namely:

(i) The cut-off point for the waiting list is arrived at by our past experience in terms of the responses from the candidates, the

number and the quality of candidates who have applied in the current year with a view to complete the admissions and start the classes in time.

(ii) Those who are admitted to a programme will continue to be on the waiting list for their higher preferences.

(iii) The waiting list is for admission to the Institute and not for a particular programme, Hence, it will not be possible to assign a waiting list number for a student for a particular programme.

(iv) A student who has a higher BITSAT score may be on the waiting list while a student who has a lesser BITSAT score may have got admission because the former crossed out a programme which the later had opted for and seats were available in that particular programme.

(v) Those who cross out a programme not only cease to be candidates for admission to the programme but also for consideration on the waiting list of the programme.

(vi) Those who get offers to be on the waiting list must pay their fees in advance to remain in the waiting list.

Some tips on showing preferences and crossing out: The candidates are strongly advised to exercise their preferences after careful consideration. ***No candidate at any time of the operation can change his/her preferences or refuse to slide up in his/her order of preference from the closing of application process till the entire admission process is completed.*** If a candidate wishes to join BITS irrespective of the programme so that he/she can float up until the admission process is complete or he/she can avail of certain unusual flexibilities like dual degree etc. it would not be in his/her interest to cross out any programme. The other extreme is where a candidate is absolutely sure of his/her inclination and such candidates would be advised to show preferences to those limited programmes only and cross out the rest.

Please note that once order of preferences are submitted by the due date, candidates will not be allowed to change the order of their preferences and the same order will be considered throughout during all the iterations.

Also, a candidate once offered admission to a particular programme, after an admission iteration, may opt out of consideration for all other programmes of higher preferences (as given in the application form). This option is to be exercised while making the payment of nominal fees and cannot be reversed under any conditions. To be abundantly clear, once a candidate has opted out of programmes of all higher preferences, he/she will not be considered for those programmes in all further iterations. Therefore, such candidates should exercise this option only after mature consideration. Such candidates will not have the option of selectively opting out of any particular campus(es)/programme(s) of higher preferences.

Normally a candidate cannot change the preferences once submitted. However, if for any reason a candidate discovers a mistake in his preferences already submitted, he can edit his preferences during the editing window, from August 22, 2021 to August 24, 2021. Please see BITS Admissions website for details.

Admissions at Pilani campus, K. K. Birla Goa Campus and Hyderabad Campus:

As already announced, admissions to BITS, Pilani- Pilani campus, BITS, Pilani – KK Birla, Goa campus and BITS, Pilani – Hyderabad Campus will be made through a single admission process. In the different admission iterations mentioned in the earlier paragraphs, it is possible that a student who has got an admission offer for a programme in one campus gets slid up for a programme at the other campus in the next iteration. Once a student reports for admission at a particular campus, he/she remains in the waiting list for the programmes of his higher preferences at the other campuses, till all admissions are finalized. To minimize inconvenience to students, once the student has reported for admission at any one of the campuses, he/she will be given a

chance to opt out of the race for the programmes offered at the other campuses and he/she will be considered only for programmes of his/her higher preferences at the campus where he/she has joined. The student has to make the decision on this option on the day of reporting for admission. Further instructions in this regard will be sent to those who have been offered admission.

In all the above matters, the Vice-chancellor's decision shall be final.

Dual degree for students of M.Sc. (Biology, Chemistry, Economics, Mathematics and Physics) programmes: The Institute has created facilities by which any student who is admitted to M.Sc. programmes is accommodated in a dual degree scheme for a second degree in B.E. programmes. This assignment is made by competition on their performance at BITS at the end of first year, separately in Pilani, Goa and Hyderabad campuses on the basis of Progressive Branching Index (PBI). Requirements of both the degrees are structured to be completed normally in five years. If a student is admitted to a second degree programme under dual degree scheme, he/she has to pay admission fees of the second programme at the time of such admission is made.

Note: There will be restriction on the availability of flexibility such as transfer and dual degree allotment for students admitted to B. Pharm. programme with PCB input. Since all the first degree programmes other than B. Pharm. programme requires PCM input, no transfer/dual degree allotment is possible with PCB input.

Direct Admission to Board Toppers:

In the past, admission process of the Institute always ensured guaranteed admission to all the students who obtained first ranks in their respective board examinations. This has given a very vital input of highly meritorious students from all over India. Continuing this tradition, the Institute will give direct admission to first rank students of all the central and state boards to the programme of their choice, irrespective of their BITSAT-2021 score.

While the first rank student in PCM stream will be considered for admission to any of the first degree programmes of his/her choice, the first rank holder of PCB stream will be considered for admission to B. Pharm. programme only.

Moreover, they should have obtained the minimum marks in PCM/PCB subjects in 12th examination, as per the eligibility criteria described above. For more details, see the later sections in this part and also the BITS website.

Eligibility criteria for admission under 'Direct admission to Board toppers' scheme:

To be eligible for admission under the 'Direct admission to Board toppers' scheme, the candidate should be the topper from the science stream having taken Physics, Chemistry, Mathematics subjects in 12th standard. To identify the topper the following criteria will be adopted (see below for PCB students).

The topper is the student who fulfills the following criteria:

a) has taken Physics, Chemistry, and Mathematics subjects in 12^{th} class and

b) has obtained the highest aggregate percentage of marks in 12^{th} class among all the students who have taken Physics, Chemistry, and Mathematics subjects in 2021 from the Board. For the purpose of calculating the aggregate percentage, the aggregate marks should include the marks of Physics, Chemistry, and Mathematics subjects in addition to other subjects which are required to pass the 12^{th} examination from the Board under consideration. Further, the Physics, Chemistry, Mathematics subject marks should be included in the aggregate, irrespective of whether the Physics, Chemistry, and Mathematics subjects are identified as main/optional/elective in his marksheet(s).

In the case of first rank candidate of Physics, Chemistry, Biology stream, the criteria is same as above, replacing the word 'Mathematics' with 'Biology' in the above paragraph. However, the first rank holder of PCB stream will be considered for admission to B. Pharm. programme only.

In the academic year 2021-22, due to the changed practice of awarding the final marks/scores/grades in the 12th grade by several boards, BITS Pilani has invited views/information regarding the First Rank holder in the 12th Standard Examination (2021-batch) of the respective boards and were requested to share the details of the first rank holder of the 12th-grade board examination from them. If the board does not announce the first rank holder or they cannot list the first rank holder for this year, they have been requested to inform the institute accordingly in the prescribed format by September 5, 2021 so that the Admission Committee of BITS Pilani can review to take appropriate decisions on First Degree admissions under the 'Direct Admission to Board Toppers' scheme of the Institute.

Accordingly, applicants may be asked to attach documentary proof in support of their claim, along with the 12th mark sheet and a letter from the Board declaring the candidate as the topper in the specified stream. The Institute will also make efforts to get these data from the different boards on its own. In all cases, the Institute will be guided by the data provided by the concerned Board. In cases where for a particular board, the data available before the deadline is insufficient or inconclusive, the admission committee may decide not to make any offer under the scheme for that specified Board. In all such cases, the decision of the Vice chancellor will be final and binding on the applicants.

The applications of such cases (if any) are to be submitted online. The filled forms are to be printed and should be posted along with the enclosures to reach the Institute before the deadline, which is **September 20, 2021**. See the BITS website for more details.

International students through 'International Student Admission (ISA) Scheme':

Candidates holding foreign passport and having valid Scholastic Assessment Test (SAT) and SAT Subject Tests scores are eligible to apply for admission under "International students scheme" at BITS Pilani-Pilani Campus, BITS Pilani-Hyderabad Campus and BITS Pilani-Goa Campus for Academic Year 2021-22. This is another mode of admission for integrated first degree programmes which does not require BITSAT-2021 score. Candidates who have taken SAT and SAT Subject Tests conducted by College Board (USA) can apply for admission to different first degree programmes at Pilani, Hyderabad and Goa Campuses of BITS Pilani for Academic Year 2021-22. Such international candidates should meet the following eligibility criteria.

- Candidates holding passport issued by a country other than India only are eligible under this scheme.
- The candidate should have passed the qualifying examination (grade 12) with Physics, Chemistry, Mathematics and English conducted by the country's or province's Board of Higher/Senior Secondary Education, including those in India, or its equivalent examination recognized by Association of Indian Universities such as the "A" levels (conducted by Cambridge International) or the International Baccalaureate, etc.
- Candidates should be proficient in English.
- The candidate should have obtained a minimum of 75% aggregate marks (or average grade of 7.5 on 10-point scale), in Physics, Chemistry and Mathematics in the above examination (grade 12). Additionally, he/she should have scored at least 60% marks (or grade of 6.0 on 10-point scale) in each Physics, Chemistry and Mathematics in grade 12.
- The candidate should have a minimum aggregate score of 1160(out of maximum of 1600) in SAT (New format), as also a minimum aggregate score of 1600 (out of maximum of 2400) in SAT Subject Tests in Physics, Chemistry and Mathematics Level 2.
- The candidate should have written the SAT and SAT subject tests not earlier than February 1, 2019.

Admissions will be made on merit determined by score obtained by the candidate in SAT Subject Tests in Physics, Chemistry and Mathematics Level 2, subject to candidate meeting above eligibility criteria. For more details on SAT & SAT Subject Tests visit website: www.collegeboard.com. SAT and SAT

subject test scores have to be sent to BITS Pilani directly through College Board using the Designated Institution (DI) code: 7759 - BITS Pilani.

Candidates who have passed the qualifying examination in 2020 or 2021 are eligible to apply under this scheme. Students who are appearing in the examination in 2021 are also eligible to apply. For more details, please visit http://www.bitsadmission.com/ois.

Preparation of Merit List for Admission (ISA):

The merit position of all eligible candidates (i.e., those who have applied under ISA scheme and have submitted application form for admission in the prescribed format with 12th marks, preferences and the required fees) will be prepared on the basis of their aggregate scores in SAT subject tests (SAT 2) in Physics, Maths, and Chemistry. To resolve tied scores so as to draw up the merit list the following methodology shall be applied in given order: SAT Mathematics Level 2 score, SAT Physics score, SAT Chemistry score, number of years of education in a foreign country, and exceptional talent.

Advance fees, Refund and Forfeiture of fees:

For the International students the rules concerning payment of fees and refund thereof are as follows:

- Candidates offered admission (or provisional admission) to any programme have to pay the required fee within the deadline mentioned in the offer letter. This includes the admission fee and first semester fees, caution deposit (refundable deposits) and Students' union fees and other advances, etc

a) A candidate offered admission to any programme of his/her preference as specified in the application form has to pay advance requisite fees plus additional fees as mentioned in his/her offer letter within the stipulated deadline (by August 25, 2021).

b) If a candidate, who is offered admission, accepts the offer by remitting the above fees but fails to complete all admissions related formalities on the specified date (will be announced soon), his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her in due course of time as mentioned under item no. (f)

c) If a candidate, who is offered admission, accepts the offer by remitting the above fees but withdraws his or her application by October 31, 2021 (through proper communication by candidates' registered email), his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her in due course of time as mentioned under item no. (f).

d) If a candidate accepts the admission offer but withdraws on or before December 31, 2021, he/she will forfeit Rs. 1000/- towards processing charges and his/her admission will stand cancelled. The remaining amount will be refunded in due course of time as mentioned under item no. (f).

e) If a candidate accepts the admission offer but withdraws after December 31, 2021, he/she will forfeit 100% of the total fees paid at the time of admission except caution deposit.

f) All applicable refunds will be completed within 30 days from the admissions closing date (tentative closing date of admission is November 20, 2021).

For the candidates on waiting list

a) Candidates placed on the waiting list will have to pay the admission fee of INR 1,16,800/- and subsequently if admission is offered in the next iteration, they are required to pay first semester fees and other fees as mentioned in the offer letter within the stipulated deadline. If admission is not offered to a wait-listed candidate, the entire admission fee will be refunded in due course of time as mentioned under item no. (f)

b) If a candidate in wait list, is offered admission, but does not accept the offer

by remitting the balance fees (i.e. facilitation fee and one semester fee after deducting fee waiver) his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her in due course of time as mentioned under item no. (f)

c) If a candidate, who is offered admission, accepts the offer by remitting the above fees but withdraws his or her application by October 31, 2021 (through proper communication by candidates' registered email), his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her in due course of time as mentioned under item no. (f).

d) If a candidate accepts the admission offer but withdraws on or before December 31, 2021, he/she will forfeit INR 1000/- towards processing charges and his/her admission will stand cancelled. The remaining amount will be refunded in due course of time as mentioned under item no. (f).

e) If a candidate accepts the admission offer but withdraws after December 31, 2021, he/she will forfeit 100% of the total fees paid at the time of admission except caution deposit.

f) All applicable refunds will be completed within 30 days from the admissions closing date (tentative closing date of admission is November 20, 2021).

Scholarship policy for International students admitted through ISA Scheme:

All International students admitted under the scheme will be provided merit scholarships in the form of tuition fee waiver as follows:

Tuition fee waiver is based on merit: Top 4% students will get 80% waiver, next 10% will get 50%, next 20% will get 30% waiver, and remaining will get 15% Tuition fee waiver. All fee waiver decisions will be announced after admissions are completed. The number of scholarships will depend on the total number of seats for the particular Academic Year in a campus.

Scholarships will be for one semester at a time. Scholarships for the first semester will be decided based on the position in the merit list within foreign students (admitted under International Students Admission scheme). Scholarships will be reviewed in each subsequent semester and will be awarded based on the academic performance of the student at BITS. For further scholarship eligibility during subsequent semesters while studying in BITS, a student has to score a Minimum CGPA of 8.0 to claim 80% tuition fee waiver, and a minimum of 6.0 CGPA for claiming any other scholarship level (50, 30, or 15%) while remaining in top 4, 10, 20, and 66% percentage respectively. These students will not be eligible for any other scholarship/aid offered by BITS Pilani but may avail other scholarships. The student must maintain the absolute minimum academic performance to be eligible to receive any form of tuition fee waiver in the subsequent semesters, viz.

The student should not have obtained more than one 'E grade' or one 'NC report' in the registered courses in the previous semester.

Further, scholarships will be provided only for the normal duration of the programme.

Higher Degree (PG) Programmes

To all the higher degree programs, admissions will be made, on the basis of merit, as per the modalities explained below:

I. Admissions based on GATE (for M.E.)/ GPAT (for M. Pharm.) score and

II. Admissions based on the marks obtained in the online HD test conducted by BITS and/or written test, group discussions and interviews conducted by BITS at its campuses/any other places. Further details are available at the BITS website, http://www.bitsadmission.com.

Ph.D. Programme

For admission to the on-campus Ph.D. programme of the Institute, the marks/grades of the candidate in the latest examination as well as his/her performance in a specially designed admission test and/or interview would be considered.

Off-Campus Ph.D. Under Ph.D. Aspirant Scheme

The Institute offers a unique opportunity for employed professionals working in Industries and R&D organizations and having long experience and proven competence in various fields to work towards Ph.D. degree of the Institute in the settings of their respective work environments. Candidate holding any of the BITS degree or working in an organization collaborating with BITS will normally be considered under this scheme. Industries interested for the development of their manpower at the doctoral level are invited to seek collaboration with BITS and sponsor their suitable candidates along with their applications in the prescribed format.

Foreign Students or Indian Students Having Qualifications from Foreign Countries

The Institute welcomes foreign students but the admission is strictly made on the basis of merit. There is no separate provision for admission of such candidates and they have to compete with all other candidates, as per the procedure already described above for various degree programmes.

In order to verify the eligibility for admissions, the candidates should enclose, with their application, documents explaining grading/marking system and calculation of cumulative grade point average/ aggregate percentage of marks along with their transcript/ mark sheet. Further the candidates must send a copy of syllabus of courses and rules and regulations for the examinations they have passed well in advance.

Students should request their examining authorities to send the transcript/ mark sheet with relevant documents directly to Dean Academic and Undergraduate Studies, BITS, Pilani - 333031, Rajasthan-India so as to reach him before the deadline.

A specially appointed committee examines all applicants with foreign qualifications regarding their eligibility for admissions.

Graduates of BITS

Candidates who come with a degree where the structure and the features of the programme are similar to that of BITS are naturally ready to fit more effectively into the BITS educational system. This experience prompts the Institute often to describe the prior preparation for another degree in the same tier or a degree in a higher tier in terms of not only a minimum qualification but also specific courses which they should have done.

Admission with marginal deficiency

For details refer to the section on flexibilities in the previous part.

Casual Students

Persons, other than regular students of BITS who desire to register for some courses to update their knowledge are designated as casual students. Casual students can register for courses on audit only and cannot enroll for a degree. The facility of taking a course on audit is principally conceived to give an opportunity to a person to update his knowledge and he cannot claim acceptance of such a course for the fulfillment of requirements of any programme, current or future.

This scheme has been devised to take care of professionals from various industries and organizations who express a desire to update their knowledge, although they, ipso-facto, have no desire to work for a degree.

Persons desiring to register as casual students should apply on the prescribed form within the last date.

Whenever such a student is admitted he may be allowed to continue as a student for a maximum period of eight registered semesters. However, he should request at the end of every semester for permission to continue him as a casual student in the succeeding semester.

The Institute may offer direct admission to a limited number of children of the staff of BITS and BET and also to some meritorious students from the schools of BET in Pilani to non-professional programmes with a proviso that the students admitted to these programmes will not be eligible for any of the flexibilities like transfer to and dual degree in any of the professional programmes.

INFORMATION FOR CANDIDATES

(To be read in conjunction with the instructions given in the application form and any other communications sent from the Institute).

APPLICATION PROCEDURE

Application for admission should be made on the prescribed form. Separate application forms are prescribed for (i) Integrated First Degree Programmes (ii) Higher Degree Programmes (iii) MBA Programmes (iv) Doctoral Programmes.

(i) Integrated First degree Programmes:

In order to apply for admission to the Integrated First Degree programmes, the candidate should have appeared in the online computer-based test (BITSAT) as per the announcement made by the Institute through separate advertisement and brochures. The last date for registering for BITSAT-2021 is 7th July 2021 and BITSAT-2021 tests are scheduled between 3rd to 9th August 2021

In addition to the application made earlier for registering for BITSAT test, the candidate should apply for admission by submitting the prescribed form, complete in all respect, so as to register before the deadline, i.e., 5:00 PM on 21st August 2021.

The application forms are available at the BITS admission website (i.e. www.bitsadmission.com) and are to be filled online along with the prescribed fee to be paid online.

Last Date for Submission of Completed application for Integrated First degree Programmes:

21st August 2021 (5.00 P.M.)

(ii) Higher Degree, MBA and Ph.D. programmes:

Interested and eligible candidates should apply through the prescribed application form available online at **http://www.bitsadmission.com/**. Further details are also available on this site.

Last Date for Submission of Completed applications:

MBA:

First Semester: 5:00 P.M. 15th February 2021**

Higher Degree:

First Semester: 5.00 P.M. on 30th June 2021

Ph.D.:

First Semester: 5:00 P.M. on 26th July 2021

Second Semester: TBA

(Refer to section on Flexibilities in the previous part).

Some Important Instructions

1. The application process, announcement of results after each iteration, detailed instructions etc. are all announced at BITS website during the various stages of the admission process. It is the responsibility of the candidate to follow these announcements and instructions.
2. The number on your application form is unique. Quote this application number in all subsequent correspondence with the Institute.
3. If you are accepting the offer of admission/accepting to be placed on the waiting list you will be required to pay fees in advance, as per the instructions mentioned along with the offer.
4. Whenever admissions are made in the second semester a separate notification to this effect will be issued. Applications for second semester admission should be submitted only after such a notification.
5. If you desire to be considered for the award of Institute merit-cum-need scholarships, you will be required to submit an income certificate showing gross income of your Parents/Guardian, duly signed by the 1st Class Magistrate/Notary Public. Persons in service should submit a certificate from employer showing separately basic salary and other allowances.

Enclosures with Application

Applications for admission to integrated first degree programmes should be accompanied by the following documents:

1. An attested photocopy of the X pass/ Matriculation/Secondary School certificate issued by the Board. (to be uploaded online)
2. An attested photocopy of the mark sheet of the qualifying and any other higher University/Board examinations passed. (to be uploaded online)

The BITSAT score for each of the candidate will be taken from the Institute records.

SELECTION FOR ADMISSION

Candidates are finally admitted to the Institute subject to the following conditions:

1. They have paid the requisite fees asked for in their admission/waiting list letters.
2. They are declared medically fit by a registered medical practitioner.
3. They have submitted all required original mark sheets & certificates, with photocopies, and the statements made in their application forms are verified against their originals.
4. They fulfill the eligibility requirements.

For Integrated first degree programmes, on the reporting day through online mode at Pilani/Goa/Hyderabad, a Dean/Senior faculty member of the Institute will interact with the candidates. If any candidate fails to be personally present on that day, his admission will stand automatically cancelled.

Every admitted student is required to undergo a registration process on the day announced for the purpose. One of the objectives of the registration process is to name the courses to be pursued during a given semester, after allowing for the student's options within the prescribed rules and regulations. By this process, each student makes his own Time Table at his own responsibility, to be followed in that semester. No student will be permitted to attend classes or use any of the Institute facilities without completing the registration process.

Advance fees, Refund and Forfeiture of fees:

In the Integrated First Degree programmes, a candidate selected for admission/placed on the waiting list through BITSAT will be required to pay fees in advance subject to the following conditions:

1. If a candidate is offered admission to any programme of his/her preference as specified in the application form, he/she has to pay admission fee of Rs. 48,100/- and requisite one semester tuition fee of Rs. 2,18,500/- within the stipulated deadline. However, if a candidate is placed on the waiting list, he/she has to pay only admission fee of Rs. 48,100/- in advance and subsequently, if he/she is offered admission he/she has to remit the semester tuition fee of Rs.2,18,500/- as announced in the wait list offer.
2. Currently the semester is planned to start via online classes since the campuses are not open for students. Therefore, candidates will be required to pay an additional amount of Rs. 3,450/- only towards the caution deposit and Students' union fees. As and when the campuses open for students, the students will be required to pay the Hostel fees, Mess electricity advance and other advances, which shall be communicated separately. Also, all students are required to join Group Medical Insurance, the details of which will be communicated to them separately, after their admissions.

a) A candidate offered admission to any programme of his/her preference as specified in the application form has to pay advance requisite fees plus additional fees of Rs. 2,70,050/- within the stipulated deadline (by September 2, 2021).

b) If a candidate, who is offered admission, accepts the offer by remitting the above fees but fails to complete all admissions related formalities on the specified date (September 29, 2021), his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her by November 05, 2021. For such cases, the candidate has to submit the required details for refund on admission website. Please

note that the refund request will be accepted only through online mode, portal for which will be available from October 15 to 20, October 2021.

c) If a candidate, who is offered admission, accepts the offer by remitting the above fees but withdraws his or her application by October 20, 2021, his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her by November 5, 2021. Please note that the refund request will be accepted only through online mode, portal for which will be available from October 15 to 20, October 2021.

d) If a candidate, who is offered admission, accepts the offer by remitting the above fees but withdraws after October 20, 2021 and on or before October 31, 2021, his/her admission will be cancelled and the total amount of fee paid by the candidate will be refunded to him/her in due course of time as mentioned under item no. (g). The refund request will be accepted only through online mode, portal for which will be available at the admission website.

e) If a candidate accepts the admission offer but withdraws on or before December 31, 2021, he/she will forfeit Rs. 1000/- towards processing charges and his/her admission will stand cancelled. The remaining amount will be refunded in due course of time as mentioned under item no. (g). The refund request will be accepted only through online mode, portal for which will be available at the admission website.

f) If a candidate accepts the admission offer but withdraws after December 31, 2021, he/she will forfeit 100% of the total fees paid at the time of admission except caution deposit.

g) All applicable refunds will be completed within 30 days from December 31, 2021.

Whenever a candidate is admitted to a programme, he/she is kept on a waiting list for programmes of his/her higher preferences. Until all admissions for First Semester 2021-2022 are completed, any vacancy in any programme caused by non-acceptance of the offers will be filled by offering the vacant seat to the next candidate in the order of merit. This process is called 'Sliding-Up'. According to the Institute rules, your acceptance of the admission offer implies that you will be automatically considered for sliding up to programme of higher preference as indicated in your application form, under the above circumstances.

1. If the Institute is not able to offer admission to a wait-listed candidate in any of programmes of his/her preferences as specified in his/her application form, the total amount of fee paid will be refunded to him/her in due course of time.

2. A candidate who accepts an offer of admission or who accepts to be placed on waiting list by paying the requisite fees (as above) can choose to remain in the competition or withdraw from the race within the stipulated deadline, details of which will be made available on the website.

3. While remitting fees, no candidate can stipulate any conditions such as changing order of preferences, addition/deletion of preferences etc. Even if any such conditions are mentioned while remitting fees, these will be ignored.

For higher degrees, conditions stipulated in the Instructions sheet sent to the shortlisted candidates, will be applicable.

The Institute reserves the right to refuse admission to any candidate without assigning any reason. The decision of the Vice-chancellor in the matter of admission and allotment of programmes of study shall be final.

Instructions for Payment

1. The schedule of fees given below is for a normal situation. Wherever a student's programme gets modified or his progress is delayed beyond the maximum permissible time, such a student is advised to consult the appropriate authority before registration.

2. The below mentioned schedule of fees is applicable for all the students admitted in September 2021. All students admitted earlier than September, 2021 will continue to be governed by the schedule of fees as

shown in the bulletin corresponding to their year of admission. However, it should be clear that they will have to pay along with the new students the same amount of fees for students' union fee, students' aid fund, hostel fee and mess & electricity advance.

3. The fees and other charges are payable in advance in each semester/term on the notified dates before registration. No withdrawal from a course or courses will entitle a student for refund of fees.
4. Students who go for Practice School II will be charged semester fees and the summer term fees because the practice school is longer than a semester and extends in to summer.
5. Casual students will pay fees prescribed for regular students.
6. Institute caution deposit is refundable only at the time of graduation or withdrawal from the Institute.
7. If there are dues outstanding from a student, his grades will be withheld.
8. Mess dues are to be cleared by each student every month. Students who accumulate mess arrears would be required to pay a prescribed additional advance at the time of next registration.

SCHEDULE OF FEES

A. The following is the details of the fees in INR payable by all students admitted in the academic year 2021-2022 at **BITS-Pilani, Pilani Campus.**

Fees	Integrated First Degrees	Higher Degrees	Ph.D. Programme	
			Full Time	Part Time
Admission Fees	48,100/-	48,100/-	48,100/-	48,100/-
Semester/Term Fees				
First Semester	2,18,500/-	2,18,500/-	21,850/-	43,700/-
Second Semester	2,18,500/-	2,18,500/-	21,850/-	43,700/-
Summer term	76,500/-	76,500/-	7,650/-	15,300/-
Students' Union fee	450/- pa	450/- pa	—	
Students' Aid Fund	225/- pa	225/- pa	225/- pa	225/- pa
Hostel fee (for on-campus students only)				
First Semester	15,550/-	15,550/-	15,550/-	
Second Semester	15,550/-	15,550/-	15,550/-	
Summer term	7750/-	7750/-	7750/-	
Ph.D. thesis examination fees	-	-	34,000/-	34,000/-
Mess & Electricity advance				
First Semester	10000/-	10000/-	10000/-	
Second Semester	10000/-	10000/-	10000/-	
Summer term	5000/-	5000/-	5000/-	
(Payable at the beginning of each semester/term and adjustable at the end of the same)				
Other Advances				
First Semester	12000/-	12000/-		
Second Semester	12000/-	12000/-		
(Payable at the beginning of each semester/term and adjustable at the end of the same)				
Institute Caution Deposit	3000/-	3000/-	3000/-	3000/-
Fee for Eligibility Test(s)/Ph.D. Qualifying Examination	Institute reserves its right to charge such a fee, which would be adjustable against admission fees if the candidate secures admission			

Also, please refer to Notes at the bottom of table C for further information.

B. The following is the details of the fees payable by all students to be admitted in the academic year 2021-2022 at **BITS-Pilani, K. K. Birla Goa Campus.**

Fees	Integrated First Degrees	Higher Degrees	Ph.D. Programme	
			Full Time	**Part Time**
Admission Fees	48,100/-	48,100/-	48,100/-	48,100/-
Semester/Term Fees				
First Semester	2,18,500/-	2,18,500/-	21,850/-	43,700/-
Second Semester	2,18,500/-	2,18,500/-	21,850/-	43,700/-
Summer term	76,500/-	76,500/-	7,650/-	15,300/-
Students' Union fee	450/- pa	450/- pa	—	
Students' Aid Fund	225/- pa	225/- pa	225/- pa	225/- pa
Hostel fee (for on-campus students only)				
First Semester	20,900/-	20,900/-	20,900/-	
Second Semester	20,900/-	20,900/-	20,900/-	
Summer term	10,450/-	10,450/-	10,450/-	
Ph.D. thesis examination fees	-	-	34,000/-	34,000/-
Mess & Electricity advance				
First Semester	10000/-	10000/-	10000/-	
Second Semester	10000/-	10000/-	10000/-	
Summer term	5000/-	5000/-	5000/-	
(Payable at the beginning of each semester/term and adjustable at the end of the same)				
Other Advances				
First Semester	12000/-	12000/-		
Second Semester	12000/-	12000/-		
(Payable at the beginning of each semester/term and adjustable at the end of the same)				
Institute Caution Deposit	3000/-	3000/-	3000/-	3000/-
Fee for Eligibility Test(s) / Ph.D. Qualifying Examination	Institute reserves its right to charge such a fee, which would be adjustable against admission fees if the candidate secures admission			

Also, please refer to Notes at the bottom of table C for further information.

C. The following is the details of the fees payable by all students to be admitted in the academic year 2021-2022 at **BITS-Pilani, Hyderabad Campus.**

Fees	Integrated First Degree	Higher Degree	Ph.D. Programme	
			Full Time	Part Time
Admission Fees	48,100/-	48,100/-	48,100/-	48,100/-
Semester/Term Fees				
First Semester	2,18,500/-	2,18,500/-	21,850/-	43,700/-
Second Semester	2,18,500/-	2,18,500/-	21,850/-	43,700/-
Summer term	76,500/-	76,500/-	7,650/-	15,300/-
Students' Union fee	450/- pa	450/- pa	—	
Students' Aid Fund	225/- pa	225/- pa	225/- pa	225/- pa
Hostel fee (for on-campus students only)				
First Semester	20,900/-	20,900/-	20,900/-	
Second Semester	20,900/-	20,900/-	20,900/-	
Summer term	10,450/-	10,450/-	10,450/-	
Ph.D. thesis examination fees	-	-	34,000/-	34,000/-
Mess & Electricity advance				
First Semester	10000/-	10000/-	10000/-	
Second Semester	10000/-	10000/-	10000/-	
Summer term	5000/-	5000/-	5000/-	
(Payable at the beginning of each semester/term and adjustable at the end of the same)				
Other Advances				
First Semester				
Second Semester	12000/-	12000/-		
(Payable at the beginning of each semester/term and adjustable at the end of the same)	12000/-	12000/-		
Institute Caution Deposit	3000/-	3000/-	3000/-	3000/-
Fee for Eligibility Test(s) / Ph.D. Qualifying Examination	Institute reserves its right to charge such a fee, which would be adjustable against admission fees if the candidate secures admission			

Notes: (Applicable to Pilani, Goa and Hyderabad Campus candidates):

1. The above prescribed semester fees is for the Integrated First Degree, Higher Degree, PhD students admitted in the academic year 2021-22. For these students, the semester, term and admission fees will be revised upward every year. The details of semester tuition fee and summer term fee is given below (unless the government announces any new levy/tax, which will be passed on to all existing students irrespective of their year of entry).

Tuition fees per semester & summer term fee (if it is required to register in summer) for the students admitted in academic year 2021-22 [for Domestic students] (Amount in INR)					
Academic Year of admission	**AY 2021-22**	**AY 2022-23**	**AY 2023-24**	**AY 2024-25**	**AY 2025-26**
Semester Tuition Fee[#]	2,18,500	2,35,500	2,54,000	2,74,000	2,95,500
Summer Term Fee[*, #]	76,400	82,400	88,900	95,900	1,03,400

2. Summer Term Tuition Fee will be about 35% of Semester Tuition Fee in Corresponding Academic Year. All three Indian campuses will have the same summer term fee in an academic year. It is to be noted that every summer term is not part of the academic calendar except where specifically stated in the Semester-wise pattern of a given programme. Though the prescribed summer term fee for domestic students is mentioned above, depending on the requirement of registration of a student in a given summer term, he/she will be required to pay summer term fee for that particular academic year only.

   [#] The tuition fees per semester for full time and part time PhD students will be 10% and 20% of the amount mentioned in the above table respectively.

3. If a student is admitted to a second degree programme under dual degree scheme, he/she has to pay admission fees of the second programme at the time such admission is made.
4. If a single degree student registers for PS II in a Semester, he/she has to pay the semester fees of the batch for that semester plus additional fees of summer term of previous academic year (i.e. about 35% of the Semester fees of the previous Academic Year). For example: If a single degree FD student registers in Practice School II (PS II) in his/her fourth year, the PS II fees will be Semester Fees of the batch for his/her corresponding Academic Year in which he/she registering for PS II plus summer term fees of the previous year (i.e. summer term fees of his/her third year). Similarly, if a dual degree FD student registers in PS II in his/her fifth year, the PS II fees will be Semester Fees of the batch for his respective Academic Year in which he/she registering for PS II plus summer term fees for that batch as per their third year of study.
5. Course-wise Fees (Per Course): Rs. 3850/- (Applicable to only certain limited courses outside academic requirement after paying full semester fees. No semester fee is computable on the basis of course wise fees).
6. If any continuing student is also admitted to a minor programme, he/she has to pay a fee of Rs. 24000/- for AY 2021-22 in addition to fees for the semesters / summer terms enrolled in. The fee is payable in two installments – Rs.12000/- at the time of admission and Rs. 12000/- on completion of requirements. Admission fees for minor programme will be revised in subsequent years as per Institute norms.
5. All fees are to be paid in advance. Only caution deposit and mess advance are refundable after adjustment of dues at the time of graduation or withdrawal from the Institute. This applies to prospective candidates who are seeking admission as well as ongoing students of the Institute.
6. For some specific programs requiring special treatment, fees and mode of their payment will be determined by the Vice-Chancellor in consultation with the Chancellor**.**

International Student Admission Scheme, BITS, Pilani
Pilani, Goa and Hyderabad campuses
For Academic Year 2021-2022
Fees required to be paid at the time of Admission (in INR)

Tentative Fee structure of students admitted through ISA-2021-2022 (All figures are in INR)						
Non-SAARC Student				***SAARC students***		
	One Time	**Semester 1**	**Semester 2**	**One time**	**Semester 1**	**Semester 2**
Application Fee	6750	-	-	6750	-	-
One time Fees (Payable at the time of Admission)						
Admission fees	116800	-	-	116800	-	-
Facilitation fee (covering charges for local travel, room and board during "orientation" in 1st month)	16130	-	-	16130	-	-
Institute Caution Deposit (Refundable on graduation or leaving the Institute, after adjusting all dues).	32000	-	-	32000	-	-
Annual Fees (Payable along with First Semester Fees)						
Students' Union, Student Aid Fund		4160			4160	
Semester Fees (Payable before the beginning of Semester)						
Tuition Fees	-	554750	554750	-	327750	327750
Hostel Fees and Internet Charges	-	44250	44250	-	44250	44250
Mess and Electricity Advance (this is adjusted against mess and electricity bills at the end of each semester).	-	10000	10000	-	10000	10000
Totals	1,71,680	6,13,160	6,09,000	1,71,680	3,86,160	3,82,000

In addition to the above, students may be required to pay for food, electricity; Medical/Health and other insurance; Visa (Application Fees/Renewal Fees) etc.

Scholarships - Tuition fee waiver is based on merit: Top 4% students will get 80% waiver, next 10% will get 50%, next 20% will get 30% waiver, and remaining will get 15% Tuition fee waiver. All fee waiver decisions will be announced after admissions are completed.

For further scholarship eligibility during subsequent semesters while studying in BITS, a student has to score a Minimum CGPA of 8.0 to claim 80% tuition fee waiver, and a minimum of 6.0 CGPA for claiming any other scholarship level (50, 30, or 15%) while remaining in top 4, 10, 20, and remaining 66% percentage.

The above semester fee is for foreign students admitted in academic year 2021-2022 for undergraduate programmes. 2022 onwards, fees will be revised upwards every year.

Other Fees (based on options selected), payable as and when required:

Summer Term Tuition Fees	35% of Semester Tuition Fees in Corresponding Academic Year
Summer Term Hostel Fees	50% of Semester Hostel Fees in corresponding Academic Year
Practice School I	35% of semester tuition fee in corresponding Academic Year
Practice School II	Summer Term Fees (as applicable) plus the semester fees of the batch for that semester
Minor Certificate Fee	6% of semester tuition fee in corresponding Academic Year
Placement Charges	3% of semester tuition fee in corresponding Academic Year

Fees required to be paid at the time of Admission (in INR)

In AY 2021-2022

	Non-SAARC	SAARC
Admission fees	116800	116800
Facilitation fee (covering charges for local travel, room and board during"orientation" in 1st month)	16130	16130
Institute Caution Deposit (Refundable on graduation or leaving the Institute,after adjusting all dues).	32000	32000
Students' Union, Student Aid Fund for AY 2021-22	4160	4160
First Semester Tuition Fees	554750	327750
First Semester Hostel Fees and Internet Charges	44250	44250
First Semester Mess and Electricity Advance (this is adjusted againstmess and electricity bills at the end of semester).	10000	10000
Other Advances (Per Semester)	12000	12000
Total	**790090**	**563090**

Note: Students are expected to pay their Fees in INR. The USD payment is to be made if any, using the conversion rate on the day of payment.

The above prescribed semester fees are for the FD students admitted through ISA scheme in the academic year 2021-22. For the students, the semester, term and admission fees will be revised upward every year. The details of semester tuition fee and summer term fee is given below (unless the government announces any new levy/tax, which will be passed on to all existing students irrespective of their year of entry).

Tuition fees per semester & summer term fee (if it is required to register in summer) for the students admitted in academic year 2021-22 [for International students] (Amount in INR)						
Academic Year of admission		**AY 2021-22**	**AY 2022-23**	**AY 2023-24**	**AY 2024-25**	**AY 2025-26**
Semester Tuition Fee	non-SAARC	5,54,750	5,99,000	6,46,500	6,98,000	7,53,500
	SAARC	3,27,750	3,53,500	3,81,500	4,12,000	4,44,500
Summer Term Fee*	non-SAARC	1,94,100	2,09,600	2,26,200	2,44,300	2,63,700
	SAARC	1,14,700	1,23,700	1,33,500	1,44,200	1,55,500

*Summer Term Tuition Fee will be about 35% of Semester Tuition Fee in Corresponding Academic Year. All three Indian campuses will have the same summer term fee in an academic year. It is to be noted that every summer term is not part of the academic calendar except where specifically stated. Though the prescribed summer term fee for International students is mentioned above, depending on the requirement of registration of a student in a given summer term, he/she will be required to pay summer term fee for that academic year only.

1. If a student is admitted to a second-degree programme under dual degree scheme, he/she has to pay admission fees of the second programme at the time of such admission is made.

2. International Students admitted in AY 2021-22 will pay tuition fee of 554750/- (for non-SAARC students) & 327750/- (for SAARC students) per Semester in AY 2021-22. In subsequent years (AY 2022-23, 2023-24, 2024-25, 2025-26 etc.) tuition fee will increase @8% every year in INR for 2021-22 batch.

3. If a single degree student registers for PS II in a Semester, he/she has to pay the semester fees of the batch for that semester plus additional fees of summer term of previous academic year (i.e. about 35% of the Semester fees of the previous Academic Year). For example: If a single degree FD student registers in Practice School II (PS II) in his/her fourth year, the PS II fees will be Semester Fees of the batch for his/her corresponding Academic Year in which he/she registering for PS II plus summer term fees of the previous year (i.e. summer term fees of his/her third year). Similarly, if a dual degree FD student registers in PS II in his/her fifth year, the PS II fees will be Semester Fees of the batch for his respective Academic Year in which he/she registering for PS II plus summer term fees for that batch as per their third year of study.

4. If any continuing international student is also admitted to a minor programme, then he/she has to pay the minor fee and in two instalments. The first instalment of the fee will be paid at the start of the minor program and it will be 3% of semester tuition fee in the corresponding academic year. The second instalment will be paid at the completion of minor program and it will be 3% of tuition fee in the semester when he /she complete minor program. This fee will be in addition to the semester/term fees. Admission fees for minor programme will be revised in subsequent years as per Institute norms.

5. All fees are to be paid in advance. Only caution deposit and mess advance are refundable after adjustment of dues at the time of graduation or withdrawal from the Institute. This applies to prospective candidates who are seeking admission as well as ongoing students of the Institute.

6. For some specific programs requiring special treatment, fees and mode of their payment will be determined by the Vice-Chancellor in consultation with the Chancellor**.**

SCHOLARSHIPS

A large number of scholarships, fellowships and other financial assistance are available to the students of the Institute. Past experience shows that about 30% of the students receive some form of financial assistance or other. For continuance of scholarships, scholarship holders are required to maintain good scholastic standing and good conduct.

Some of the scholarships/financial assistance normally available are listed below:

1. Institute's own merit or merit-cum-need awards for students:

a) For FD students: Every year about 30% of students admitted to First Degree Programs get semester tuition fee waivers in the range between 15% to 100% in the form of either merit or merit-cum need scholarships as tabulated below:

Under Institute's own merit award scheme	**Amount of scholarship**
Top 1% Students	100% of total tuition fee
Top 2% Students	40% of total tuition fee
Under Institute's own merit-cum-need awards scheme	**Amount of scholarship**
3% Students	80% of total tuition fee
6% Students	40% of total tuition fee
12% Students	25% of total tuition fee
6% Students	15% of total tuition fee

Note: There will be no waiver of admission fee.

b) All awards are made for one semester only and their continuance in the subsequent semesters(s) will depend on the candidate's performance in the Institute and his/her needs.

c) Approximately 50% of full time Ph.D. students without any other aid will also get a monthly stipend of up to Rs. 31,000/- which will be in the form of assistantship for which they will be required to devote up to 8 - 10 hours per week for assisting in teaching/research or in administration.

The Institute's decision on these awards/ stipends is entirely worked out by the Institute's own pre-declared procedure and is not dependent on the nationally conducted tests such as GATE, GPAT etc.

2. Students admitted to Higher degrees and Ph.D. will also be recommended for award of scholarships /Fellowships from various sources like UGC, CSIR, DST, DBT, ICMR, etc. These Scholarships are operated as per rules & regulations stipulated by the awarding authorities. Students admitted to higher degree programmes and who are qualified in GATE may apply to the UGC for the GATE scholarship and the Institute will forward such applications to the UGC. It should be noted that the decision regarding award of the GATE / GPAT scholarship to admitted students is made by UGC as per its existing norms and the Institute cannot guarantee such awards.
3. Scholarships under National Talent Search/ National Science Talent Search Schemes.
4. Government of India National Scholarships.
5. Merit Scholarships, Merit-cum-need Scholarships and Need-cum-Merit Scholarships awarded by State Governments.
6. Government of India Scholarships for Scheduled Caste and Scheduled Tribe students.
7. National Scholarships to the children of Primary and Secondary School teachers.
8. Scholarships from various charitable trusts.
9. Financial assistance from Students Aid Fund.
10. The Ministry of Non-Conventional Energy Sources (MNES), Govt. of India has sanctioned two research fellowships to the Institute for advanced study in the area of Renewable Energy.
11. Students can also participate in the nationwide competitions for prestigious scholarships such as Aditya Birla Scholarship, Lucent Global Science Scholars Program and GE Fund India Scholarship.
12. Financial Assistance from BITS Alumni. BITS and BITSAA International Travel Fellowship is co-sponsored by the Institute and BITSAA International. Meritorious students are supported with 75% of travel cost for traveling abroad for presenting selective papers at international conferences.

Student Record

The students' records are computerized and a grade sheet for each semester is issued to the student normally within one week after the comprehensive examination.

The grade sheet will be withheld when a student has not paid his dues or when there is a pending case of breach of discipline or a case of unfair means against him.

The Institute issues a transcript (an up-to-date performance of a candidate from the date of his entry to the date of his leaving the Institute) to all the passing out candidates at the end of each semester/summer term normally within four weeks of the last examination. The provisional certificate is issued and refund of the positive balance and caution money by RTGS is made at the same time. This estimate is based on an assumption that each candidate has ensured by prior initiative that there is nothing pending against him on academic, financial and disciplinary matters.

Since all student records are computerized, each student is assigned a unique identification number (ID No.) which is constructed by building in the number certain information to assist in data storage and data retrieval. No two ID numbers are ever identical.

Degree programmes are assigned codes as below and the ID No. carries the degree programme code(s) along with other information such as year of admission, whether in Practice School (PS) or Thesis (TS) stream and the last character indicates the campus which a student belongs to For example, 2020A1PS350P refers to a student admitted in 2020-21 to B.E. Chemical Engineering (with Practice School) programme at Pilani Campus. The Higher Degree students are assigned ID No. indicating whether the candidate is in PS stream (K1) or in the Dissertation (H1) stream. For example, 2020K103350P refers to a student admitted in 2020-21 to M.E. Computer Science (with Practice School) programme at Pilani Campus.

Programme Codes

First Degree Programmes	
B.E. Chemical	A1
B.E. Civil	A2
B.E. Electrical & Electronics	A3
B.E. Mechanical	A4
B. Pharm.	A5
B.E. Computer Science	A7
B.E. Electronics and Instrumentation	A8
B.E. Biotechnology	A9
B.E. Electronics & Communication	AA
B.E. Manufacturing Engineering	AB
M.Sc. Biological Sciences	B1
M.Sc. Chemistry	B2
M.Sc. Economics	B3
M.Sc. Mathematics	B4
M.Sc. Physics	B5
M.Sc. General Studies	C2
M.Sc. Engineering Technology	C5
M.Sc. Information Systems	C6
M.Sc. Finance	C7
Higher Degree Programmes	
M.E. Biotechnology	29
M.E. Chemical	01
M.E. Chemical with specialization in Petroleum Engineering	32
M.E. Civil with specialization in Structural Engineering	43
M.E. Civil with specialization in Transportation Engineering	30
M.E. Civil with specialization in Infrastructure Engineering & Management	44
M.E. Civil with specialization in Water Resources	11
M.E. Communication Engineering	24
M.E. Computer Science	03
M.E. Design Engineering	41
M.E. Electrical with specialization in Power Electronics & Drives	31
M.E. Embedded Systems	40
M.E. Information Security	13

M.E. Manufacturing Systems Engineering	42
M.E. Mechanical	06
M.E. Mechanical with specialization in Thermal Engineering	48
M.E. Microelectronics	23
M.E. Sanitation Science, Technology and Management	51
M. Phil.in Liberal Studies	52
M.E. Software Systems	12
M. Pharm.	08
M. Pharm. with specialization in Pharmaceutics	46
M. Pharm. with specialization in Pharmaceutical Chemistry	47
M. Pharm. with specialization in Pharmacology	53
M.B.A.	49
MPH	37

RULES AND REGULATIONS

All students admitted to the Institute will be governed by the Rules and Regulations that are prescribed from time to time.

Anti-Ragging

The Institute has formulated strict anti-ragging guidelines and all students are required to sign an undertaking to abide by these guidelines. Students, if found violating these guidelines are liable to disciplinary action including expulsion from the Institute and also possible legal action as per the directive from the Honourable Supreme Court of India.

The Institute has formed a committee and anti-raging squads at hostel and institute level to combat raging. The students can also communicate directly with the Dean, Students Welfare, through the Institute website.

Information for Candidates for all Work Integrated Learning Programme

Prospective candidates must consult the separate section in the Institute Bulletin. They should note that a separate application form is provided for admission to Work Integrated Learning programmes. It is further to be noted that all rules, regulations will automatically apply in the Work Integrated Learning programmes. Information about these can also be obtained at http://www.bits-pilani.ac.in/university/wilp/wilpoverview

INFORMATION FOR CANDIDATES APPLYING FOR BITS PILANI, DUBAI CAMPUS

Admissions to Dubai Campus are based on merit in qualifying examinations. All equivalent international qualifications are considered. A specially appointed committee examines all applicants with foreign qualifications regarding their eligibility for admissions.

For educational process and programmes of studies, refer section II. For candidates admitted from countries other than UAE, student residence visa is facilitated.

APPLICATION PROCEDURE

Application for admission to Dubai Campus should be made in the prescribed form available at: www.bits-pilani.ac.in/dubai. Separate application forms are prescribed for (i) First Degree Programmes (ii) Higher Degree Programmes (iii) Doctoral Programme.

INTEGRATED FIRST DEGREE PROGRAMMES

Admissions are made purely on overall aggregate in the qualifying examination (12^{th} Grade or its equivalent examination), secured by the candidate. There is no separate admission test. Admission is offered based on merit, seats in the preferred discipline and facilities available.

Eligibility for admission

For admission to all integrated first degree programmes, the eligibility requirement is a minimum of 60% overall aggregate* marks in the qualifying examination and a minimum aggregate of 60% in the Physics, Chemistry and Mathematics subjects with at least 50% marks in each subject in the Senior School Certificate Examination of the Central Board of Secondary Education (CBSE-12th grade), New Delhi, India, or its equivalent from any recognized International, National, or State examination with adequate proficiency in English. However, for admission to B.E Biotechnology, candidates with Physics,

Chemistry and Biology will also be accepted with a minimum aggregate of 60% in Physics, Chemistry & Biology subjects with at least 50% marks in each subject.

** Aggregate: Aggregate is the total marks of all subjects in the Qualifying Examination, considered essential by the Board/University for passing the examination. The Aggregate must compulsorily contain the required subjects, namely, Physics, Chemistry and Mathematics.*

The mechanism of admission for Dubai Campus:

Applying for admission:

(i) In order to apply for admission to the Integrated First Degree programmes, the candidate should submit the application in prescribed form. The application form is available at the website: www.bits-dubai.ac.ae/admission and must be filled online.

(ii) The candidate must fill only a single application form for seeking admission to all the degree programmes offered at Dubai Campus.

Preparation of Merit List and Admission process:

(i) The merit list will be prepared on the basis of overall aggregate percentage of marks obtained by the candidates in the Qualifying Examination (12th grade or equivalent), for all eligible candidates, whose application, complete in all respects with 12th marks, preferences and required fees, is received till last date.

(ii) If a candidate with a higher merit position is not able to get any of his/her programme preference due to non-availability of seats in the indicated preferences, such a candidate is kept in Waiting List. For a candidate to secure the seat or remain in the race, it is mandatory to pay the required fees in advance as mentioned in the Admission/Wait list letter.

(iii) Normally a candidate cannot change the preferences once submitted. Candidates are strongly advised to exercise their preferences after careful consideration and give preference for all programmes to better the chances of admission.

(iv) Admission Offer letter is sent to candidates above the cut-off of merit. To accept the offer of admission, candidate must comply with all the requirements specified in the Admission Offer letter including submission of various documents and payment of fee on or before the date mentioned in the Admission Offer letter. If the requirements are not met by the specified due date, the admission offer will be deemed to be cancelled and the seat will be allotted to Wait Listed candidates.

HIGHER DEGREE PROGRAMMES

The Higher Degree Programmes offered at Dubai Campus are uniquely designed and structured to meet the learning aspirations of Engineers, who are employed Executives, Entrepreneurs and Professionals. The admission is based on the performance of the candidate in the qualifying degree and Admission test.

Admissions to Higher Degree Programmes are done in both the semesters. Candidates interested in applying can fill the application form online. Deadline for submission of Application form is given on the website.

DOCTORAL PROGRAMME (Ph.D.)

The Doctoral programme is offered in Engineering and allied interdisciplinary areas. A candidate with a higher degree: namely M.E./M.S./M.B.A./ M.Phil. of BITS Pilani or its equivalent from any other recognized university can apply for the doctoral programme.

For admission to the Ph.D. programme, the marks/grades of the candidate in the latest examination as well as the performance in a specially designed admission test and/or interview would be considered.

Admissions to Doctoral Programme are done in both the semesters. Candidates interested in applying for Doctoral Programmes can apply online at the website: www.bits-dubai.ac.ae/admission. Deadline for submission of Application form is 1 June 2021 for First Semester 2021-22 and 8 December 2021 for the Second Semester 2021-22.

FLEXIBILITIES FOR FIRST DEGREE PROGRAMMES AT DUBAI CAMPUS

The educational process permits multiple entry points into the programmes and allows several other flexibilities. As in the admission process, the decision for use of flexibilities is guided by the principle of merit, preferences and facilities available.

Practice School, Dual Degree and Transfer

For details, refer to the section on flexibilities in the previous part.

Admission with Advanced Standing

For details, refer to the section on flexibilities in the previous part and the website: www.bits-pilani.ac.in/admission.

Second Semester Admission

The structural flexibilities available in the Institute make it possible to admit students in both the semesters. However, most of the admissions are made during the first semester itself. The second semester admissions provide opportunity to candidates who could not apply in time for the first semester admissions.

The second semester admission students are merged with the students admitted in the first semester. They may be doing courses with the students admitted in the same academic year or in the next academic year. The total normal duration of programme will be eight semesters.

A separate admission notification for second semester admissions will be issued in October 2021.

Other Flexibilities

For details, refer to the section on flexibilities in the previous part

Some Important Instructions

1. The application process, announcement of admission, detailed instructions, etc., will be available at Dubai Campus website. It is the responsibility of the candidate to follow these announcements and instructions.
2. Application forms sent by Fax or Email will not be accepted.
3. The application number allotted to you on submission of application form is unique. Quote this application number in all subsequent correspondence.
4. To accept the offer of admission/accepting to be placed on the waiting list, you are required to pay fees in advance, as per the instructions mentioned along with the offer.

SELECTION FOR ADMISSION

Candidates are finally admitted to the Dubai Campus of BITS Pilani subject to the following conditions:

1. They have paid the requisite fees as specified in their admission/waiting list letters.
2. They are declared medically fit by a registered medical practitioner and local medical examination, if required.
3. They have submitted all required original marksheets & certificates, with photocopies, and the statements made in their application forms are verified against their originals.
4. They fulfil the eligibility requirements.
5. They have a valid UAE Residence Visa or shall get a UAE residence visa facilitated by the Institute. Any student not having a valid residence visa, at any time during the study, will not be permitted to register.
6. For Integrated first-degree programmes, on the reporting day at Dubai, a Dean/Senior faculty member of the Institute will interact with the candidates.

7. Every admitted student is required to undergo a registration process every semester, on the day announced for the purpose. One of the objectives of the registration process is to name the courses to be pursued during a given semester, after allowing for the student's options within the prescribed rules and regulations. By this process, students make their own Timetable at their own responsibility, to be followed in that semester. No student will be permitted to attend classes or use any of the Dubai Campus facilities without completing the registration process.

Advance fees, Refund and Forfeiture of fees

1. A candidate offered admission/placed on the waiting list will be required to pay all requisite fees in advance.
2. If a candidate is offered admission either directly or from the waiting list but does not join the Institute, then the refund will be based on the following:
   i. If a candidate completes the admission formalities but withdraws before the date of registration, the admission will automatically stand cancelled and 80% of first instalment of first semester tuition fees is refundable.
   ii. If a student withdraws within one week of the date of registration irrespective of whether the student registers or not, 50% of the first instalment of first semester tuition fee will be refundable.
   iii. If a student withdraws after one week of the date of registration irrespective of whether the student registers or not, the entire first instalment of first semester tuition fees paid is non-refundable.
   iv. If the Institute is not able to offer admission to a Waitlisted candidate to any programme of preferences as shown in his application form, the total amount of advance tuition fees will be refunded.
   v. While remitting advance fees no candidate can stipulate any conditions such as changing order of preferences, addition/ deletion of preferences etc. Even if any such conditions are mentioned while remitting fees, they will be ignored.
   vi. Application Fee, Admission Fee and all Visa related fees are non-refundable.

For refund of hostel, transport and other fees, conditions stipulated in the Admission Bulletin will be applicable

SCHEDULE OF FEES

D. The following are the details of the fees payable by all students to be admitted in the academic year 2021-22 at **BITS Pilani, Dubai Campus** (all figures are in AED).

One - Time Fee (Payable at the time of Admission)			
	Integrated First Degree	**Higher Degree**	**Ph.D. Programme**
Application Fee**	220	220	220
Admission Fee*	1,800	1,800	1,800
Activity Fee*	1,200	1,200	1,200
Caution Deposit$	5,000	2,000	2,000
Tuition Fee*			
First Semester (Payable in 2 installments)	23,500	16,000	2,400# (On-Campus)
Second Semester (Payable in 2 installments)	23,500	16,000	3,600 (Part-Time & Off-Campus per semester)
Summer Term (Payable for PS 1 after second year)	5,750	-	
Hostel fee (For Students Availing Hostel)			
First Semester***	15,000		
Second Semester***	15,000		
Summer Term***	5,200		
Hostel Caution Deposit$	2,000		
Facility Fee*	750 per annum		
Laundry charges and services charge for using refrigerator in room are additional			
Visa and Insurance Fee (For Students availing Visa/Insurance)			
Fresh Visa Fee**	2,900		
Visa Renewal Fee**	2,150		
Medical Insurance Fees*	2,000		
Current prevailing Visa and Insurance Fee, subject to change)			
Transport Fees(For day scholars availing Institute Transport)**			
For Dubai	2,000		
For Sharjah & Ajman	2,300		

*VAT of 5% is applicable on this fee
**VAT of 5% is included on this fee
***VAT of 5% will be charged on the food cost of the hostel fee
$ Refundable after adjustment of all dues on graduation or on leaving the institute, after due adjustment for damages, breakages caused by the student, if any.
# Fee after providing a fee waiver of 80% of tuition fee for On-Campus scholars and 70% of tuition fee for Part-Time and Off-Campus scholars.

Notes:

1. A fee of AED 4000+vat per course is applicable for casual students registering for any course on audit only during any semester apart from a one-time admission fee.
2. Visa fee payable annually and is subject to change by Government of U.A.E.
3. If a student is admitted to a second-degree programme under dual degree scheme, he/she has to pay admission fees of the second programme at the time such admission is made.
4. The fees and other charges are payable in advance in each semester/term on the notified dates before registration. Non-payment of fees and dues may result in semester registration cancellation. No withdrawal from a course or courses will entitle a student for refund of fees.
5. If there are dues outstanding grades will be withheld.
6. Refunds, if any, will be made through Bank Transfers/ Bank drafts.

SCHOLARSHIPS AT DUBAI CAMPUS

A large number of scholarships, fellowships and other financial assistance are available to the students admitted to Dubai Campus. For continuance of scholarships, scholarship holders are required to maintain good scholastic standing and good conduct.

Some of the scholarships/financial assistance normally available are listed below:

Merit Scholarships for First Degree Students

(a) New Admission students

1. **Board Toppers:** Candidates who have secured the top position in 12th standard in their respective boards (General Secondary Education Certificate Examination of Ministry of Education, UAE or CBSE-India or any other State, National or International Board) are given merit scholarship of 50% of the first year tuition fee. The minimum overall aggregate of the candidate must be a minimum of 90% or equivalent in the qualifying exam to avail the scholarship.

2. **Merit in Qualifying Examination:**

   i) Students who have obtained 95% or above in the aggregate of the Qualifying Examination are given a merit scholarship of 40% of first year tuition fee.

   ii) Students who have obtained 90% or above but less than 95% in the aggregate of the Qualifying Examination are given a merit scholarship of 25% of first year tuition fee.

   iii) Students who have obtained 80% or above but less than 90% in the aggregate of the Qualifying Examination are given a merit scholarship of 15% of first year tuition fee.

   iv) Candidates who have obtained 70% or above but less than 80% in the aggregate of the qualifying examination are given a merit scholarship of 10% of the first year tuition fee.

3. **Merit in BITSAT:** Students with **BITSAT 2021 (or BITSAT 2020)** score of 200 or above are given merit scholarship of 25% to 75% of tuition fees based on the BITSAT score for the first year.

4. **Hostel Fee Concession**: Admitted students with BITSAT 2021/2020 score of 150 or above or an aggregate of 70% or above in the qualifying examination will be offered a 25% concession in the Hostel fee for the normal duration of the programme (four years).

(b) Merit Scholarship for continuing students

All Students with a CGPA of 9.00 or above on a 10.00-point scale at the end of a previous semester are given a merit scholarship of 20% of tuition fee for the current semester.

(c) Other Special Concessions (First Degree Programmes)

1. **Arab Nationals:** Meritorious GCC/Arab Nationals will be offered a scholarship of upto 75% on the tuition fee for the normal duration of the programme based on their performance in the qualifying exam (Grade 12 or equivalent) and continuity of a minimum CGPA of 6:00 on a 10:00 scale during the programme. This will be restricted to specific number of students.
2. **For Sudden bereavement of earning member of the family:** Such students are helped by waiving off up to 100% tuition fee for that semester followed by up to 75% in the subsequent semesters on a case to case basis, depending on means and need.
3. **For Physically Challenged Students:** All physically challenged students satisfying the conditions laid out in the Bulletin are given 15% concession on the tuition fee throughout the programme subject to satisfactory academic performance in each semester.
4. **For Sibling:** For families that have more than one child enrolled concurrently, a concession of 25% on the tuition fee is offered to the second child until the first child graduates.

Scholarships for Higher Degree Programmes

1. **Merit in Qualifying Examination:** Students who have obtained aggregate marks of 75% or above in the Qualifying Examination (B.E./B.Tech.) are given a merit scholarship of 20% of first semester tuition fee.
2. Students who are UAE Nationals will be offered 50% tuition fee scholarship for the normal duration of the programme based on their performance in the qualifying exam and continuity of a minimum CGPA of 6:00 on a 10:00 scale during the programme.
3. BITS Alumni, Employees of Collaborative Organizations and Siblings/Parents of continuing students will be offered a 10% concession on the tuition fee, during the normal duration of the programme.
4. **Merit Scholarship for continuing students:** All Students with a CGPA of 9.00 or above on a 10.00-point scale at the end of a previous semester are given a merit scholarship of 20% of tuition fee for the current semester
5. **Hostel Fee Concession:** Higher degree students who have obtained aggregate marks of 80% or above in the Qualifying Examination (B.E./B.Tech) are given a concession of 25% on the hostel fee for the normal duration of the programme.

Scholarships for Ph.D. Programmes

Full-time, on-campus Ph.D. Scholars will be considered for 80% tuition fee waiver and part-time Ph.D. Scholars will be considered for 70% tuition fee waiver for the normal duration of the programme subject to terms and conditions.

PART IV
DETAILS OF PROGRAMMES

Legend

AN	Aeronautics
BIO	Biological Sciences
BIOT	Biotechnology
CDP	Courses on Development Process
CE	Civil Engineering
CHE	Chemical
CHEM	Chemistry
CHI	Chinese
CS/Comp/Comp Sc	Computer Science
ECON	Economics
ECE	Electronics and Communication Engineering
EEE	Electrical & Electronics Engineering
EI	Electronics & Instrumentation
ES	Engineering Science
ET	Engineering Technology
Engg	Engineering: Chemical, Civil, Computer Science, Electrical & Electronics, Electronics & Instrumentation, Electronics and Communication, Manufacturing, Mechanical
ENGL	English
ExptlSc	Experimental Science: Biological Sciences, Chemistry, Physics
FIN	Finance
FRE	French
GER	German
HSS	Humanities and Social Sciences
IS	Information Systems
ITEB	Internet Technology and e-Business
JAP	Japanese
L	Lecture hours per week
MATH	Mathematics
MBA	Master of Business Administration
MECH	Mechanical
MF	Manufacturing Engineering
Min/Max	Indicates minimum/maximum number of units specified in a course or semester programme
MGTS	Management
MGSYS	Management Systems
MM	Manufacturing Management
MPH	Master in Public Health
MST	Material Science and Technology
P	Practical, Seminar & Project, etc. hours per week
PHIL	Philosophy
PHARM	Pharmacy
PHY	Physics
RUS	Russian
SAN	Sanitation Science, Technology and Management
SS	Software Systems
Sc.	Biological Sciences, Chemistry, Economics, Mathematics, Physics
T	Suffixed to a course number indicates that a non-letter grade will be awarded in such a course
TA	Technical Arts
TOC	Technique Oriented Courses
U	Number of units associated to a course

Course descriptions are available at:**www.bits-pilani.ac.in/courses/fs_coursedescriptions.html**

INTEGRATED FIRST DEGREE PROGRAMMES

(I) Structure of the Integrated First Degree Programmes

The structure and the requirements of the first degree programs ,namely, B.E.,B. Pharm., and M.Sc., are provided in the following sections.

The structure and the requirements of the first degree programs, namely, B.E., B. Pharm, M.Sc., and M.Sc.(Tech) are the same as provided in the following sections although the nomenclature of these programs is indicated without the Hons. / Tech. tag in the rest of the section**.**

The category-wise structure of each program:

Category	Number of Units Required	Number of Courses Required
(I) General Institutional Requirement		
Humanities Electives	8	3
Science Foundation	12	6
Mathematics Foundation	12	4
Engineering Foundation	6	2
Technical Arts	10	4
General Awareness / Professional Courses	3 to 6	1 to 3
Sub-Total	**51 to 54**	**20 to 22**
(II) Discipline Requirement		
Core	33 to 48	10 to 16
Elective	12 to 27	4 to 9
Sub-Total	57 to 60	15 to 20
(III) Open Electives	15 to 27	5 to 9
Course-work Sub-Total	**129 (min)**	**41 (min)**
(IV) PS-I and II **OR** **Thesis**	25 OR 9 to 16	2 OR 1
Total	**144 (min)**	**42 (min)**

A student should complete the minimum number of courses and units required in each category as well as meet the minimum requirements of courses (42) and units (144) in total.

1. The following courses are needed to meet the General Institutional Requirement:

a) General Biology, Biology Laboratory, General Chemistry, Chemistry Laboratory, Mechanics, Oscillations and Waves, and Physics Laboratory under the head of Science Foundation. For specific programs, General Physics may replace Mechanics, Oscillations and Waves.

b) Electrical Sciences, Thermodynamics and Process Engineering under the head of Engineering Foundation.

c) Computer Programming, Workshop Practice, Engineering Graphics, and Technical Report Writing under the head of Technical Arts.

d) Principles of Economics, or Principles of Management and Environmental Studies* under the head of General Awareness / Professional courses. *[Students completing this course will be awarded a non-letter grade (GOOD or POOR)]

2. The courses under the following heads are designed to meet the General Institutional Requirement under the head of Humanities Electives:
    - Languages and Literature
    - History and Philosophy
    - Political and Social Sciences
    - Fine Arts and Professional Arts
3. A thesis is for 16 units and for a full semester duration. But a student has the option of pursuing a Thesis of 9 units concurrently with coursework over a full semester, in which case the additional coursework would be at least 2 courses of total 6 units to meet the minimum unit requirements.

The nominal semester-wise chart for first degree programs are given in the Pages IV-3-20.

Dual Degree Programs:

Based on the above, the structure of a dual degree program has been derived using the following principles.

- General Institute Requirements will remain the same for both the degrees of the composite dual-degree program and therefore need not be repeated.
- While the Discipline Requirements of each of the two degrees in a dual degree program have to be met separately, any course that meets the discipline requirements of both the degree programs need not be repeated.
- In addition the Discipline Elective courses of either of the two degrees in a dual degree program may be used to fulfill the open elective requirement of the other degree.
- A PS-II or Thesis must be done to meet the requirements of each degree. Therefore to complete the dual degree program a student must complete one of the following:
    - 2 Practice School-II courses
    - 2 Thesis courses
    - 1 Practice School-II course and 1 Thesis course.

A thesis for 9 units with concurrent course work for at most 9 units over a full semester duration is also possible as an option.

Based on these principles, the semester-wise patterns for a composite dual degree program as options for the student are shown in pages IV-21-23. However the charts mentioned on pages IV-24-63 are designed to enable the students to complete the composite dual degrees in their respective programmes in 10 semesters.

Semester-wise Pattern for Students Admitted to B.E. Biotechnology Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Open/Humanities Electives	3(min)			or	or
	BIOT	F211	Biological Chemistry	3	MGTS	F211	Principles of Management	3
	BIOT	F212	Microbiology	4			Open/Humanities Electives	3(min)
	BIOT	F215	Biophysics	3	BIOT	F241	Genetic Engineering Techniques	4
	BIOT	F213	Cell Biology	3	BIOT	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIOT	F245	Introduction to Environmental Biotechnology	3
					BIOT	F244	Instrumental Methods of Analysis	4
				22				**20**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	3to6
	BIOT	F311	Recombinant DNA Technology	3	BIOT	F342	Immunology	3
					BIOT	F343	Experiments in Biotechnology	3
	BIOT	F314	Industrial Microbiology & Bioprocess Engineering	4	BIOT	F344	Downstream Processing	3
			Discipline Electives	8			Discipline Electives	6
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	3			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core -43 Units (13 Courses)

Discipline Electives-15 Units(5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Chemical Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	CHE	F211	Chemical Process Calculations	3	MGTS	F211	Principles of Management Humanities Electives	3 3(min)
	CHE	F214	Engineering Chemistry	3	CHE	F241	Heat Transfer	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F212	Fluid Mechanics	3	CHE	F243	Material Science & Engineering	3
	BITS	F225	Environmental Studies	3	CHE	F244	Separation Processes I	3
				21 (min)				**18(min)**
Summer	**BITS F221 Practice School – I(for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	3to6
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F313	Separation Processes II	3	CHE	F342	Process Dynamics &	3
	CHE	F311	Kinetics & Reactor Design	3			Control	
	CHE	F314	Process Design Principles I	3	CHE	F343	Process Design	
			Discipline Electives	3			Principles II	3
							Discipline Electives	6
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				11/17				**15/20**

Discipline Core -45 Units (15 Courses)

Discipline Electives-15 Units(5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Civil Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3 (min)			or	or
	CE	F211	Mechanics of Solids	3	MGTS	F211	Principles of Management	3
	CE	F231	Fluid Mechanics	3			Humanities Electives	3 (min)
	CE	F213	Surveying	4	CE	F241	Analysis of Structures	3
	CE	F230	Civil Engineering Materials	4	CE	F242	Construction Planning & Technology	3
					CE	F243	Soil Mechanics	4
					CE	F244	Highway Engineering	4
					BITS	F225	Environmental Studies	3
				20 (min)				**20(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	1 to 4			Open/Humanities	2 to 5
	CE	F320	Design of Reinforced Concrete Structures	3			Electives	
	CE	F312	Hydraulic Engineering	4	CE	F342	Water & Waste Water	4
	CE	F313	Foundation Engineering	3			Treatment	
			Discipline Electives	6	CE	F321	Engineering Hydrology	3
					CE	F343	Design of Steel Structures	3
							Discipline Electives	6
				17/20				**18/21**
IV			Open Electives	8to14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core -48 Units (14 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B. E. Computer Science Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	CS	F214	Logic in Computer Science	3	MGTS	F211	Principles of Management	3
	CS	F222	Discrete Structures for Computer Science	3			Humanities Electives	3(min)
	CS	F213	Object Oriented Programming	4	CS	F211	Data Structures & Algorithms	4
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
					CS	F212	Database Systems	4
					BITS	F225	Environmental Studies	3
				20(min)				**21(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	2to5
	CS	F351	Theory of Computation	3				
	CS	F372	Operating Systems	3	CS	F363	Compiler Construction	3
	CS	F301	Principles of Programming Languages	2	CS	F364	Design & Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
			Discipline Electives	3(min)			Discipline Electives	6(min)
				18/21				**18/21**
IV			Open Electives	6to12	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				9/15				**15/20**

Discipline Core -48 Units (14 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Electrical & Electronics Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	EEE	F211	Electrical Machines	4	MGTS	F211	Principles of Management	3
	EEE	F212	Electromagnetic Theory	3			Humanities Electives	3(min)
	EEE	F215	Digital Design	4	EEE	F241	Microprocessors & Interfacin	4
	EEE	F214	Electronic Devices	3	EEE	F242	Control Systems	3
					EEE	F243	Signals & Systems	3
					EEE	F244	Microelectronic Circuits	3
					BITS	F225	Environmental Studies	3
				20(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	4to6			Open/Humanities Electives	3to6
	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or		EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2			Discipline Electives	4(min)
	EEE	F313	Analog & Digital VLSI Design	3				
			Discipline Electives	5(min)				
				18/21				**18/21**
IV			Open Electives	5to11	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core -47 or 48 Units (14 Courses)

Discipline Electives-12 Units (4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Electronics & Communication Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	ECE	F211	Electrical Machines	4	MGTS	F211	Principles of Management	3
	ECE	F212	Electromagnetic Theory	3			Humanities Electives	3(min)
	ECE	F215	Digital Design	4	ECE	F241	Microprocessors and	
	ECE	F214	Electronic Devices	3			Interfacing	4
					ECE	F242	Control Systems	3
					ECE	F243	Signals & Systems	3
					ECE	F244	Microelectronic Circuits	3
					BITS	F225	Environmental Studies	3
				20(min)				**22(min)**
Summer				**BITS F221 Practice School – I (for PS Option Only)**				
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F314	Electromagnetic Fields &		ECE	F343	Communication Networks	3
			Microwave Engineering	3	ECE	F344	Information Theory &	
	ECE	F434	Digital Signal Processing	4			Coding	3
			Discipline Electives	4(min)			Discipline Electives	5(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	3			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				8/14				**15/20**

Discipline Core-48 Units (14 Courses)

Discipline Electives-12 Units (4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Electronics and Instrumentation Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	INSTR	F211	Electrical Machines	4	MGTS	F211	Principles of Management	3
	INSTR	F212	Electromagnetic Theory	3			Humanities Electives	3(min)
	INSTR	F215	Digital Design	4	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F214	Electronic Devices	3	INSTR	F242	Control Systems	3
					INSTR	F243	Signals & Systems	3
					INSTR	F244	Microelectronic Circuits	3
					BITS	F225	Environmental Studies	3
				20(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	3to6
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
					INSTR	F342	Power Electronics	4
	INSTR	F312	Transducers & Measurement Systems	3	INSTR	F343	Industrial Instrumentation & Control	3
	INSTR	F313	Analog & Digital VLSI Design	3			Discipline Electives	4(min)
			Discipline Electives	5(min)				
				18/21				**18/21**
IV			Open Electives	5to11	BITS	F412	Practice School-II	20
			Discipline Electives	3			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core- 48 Units (14 Courses)

Discipline Electives-12 Units (4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Mechanical Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BITS	F110	Engineering Graphics	2	BITS	F111	Thermodynamics	3
	BIO	F110	Biology Laboratory	1	BITS	F112	Technical Report Writing	2
	BIO	F111	General Biology	3	CS	F111	Computer Programming	4
	CHEM	F110	Chemistry Laboratory	1	EEE	F111	Electrical Sciences	3
	CHEM	F111	General Chemistry	3	MATH	F112	Mathematics II	3
	MATH	F111	Mathematics I	3	MATH	F113	Probability and Statistics	3
	PHY	F110	Physics Laboratory	1	ME	F112	Workshop Practice	2
	PHY	F111	Mechanics, Oscillations and Waves	3				
				17				**20**
II	MATH	F211	Mathematics III	3	BITS	F225	Environmental Studies	3
	ME	F211	Mechanics of Solids	3	ECON	F211	Principles of Economics	3
	ME	F212	Fluid Mechanics	3			or	or
	ME	F213	Materials Science & Engineering	3	MGTS	F211	Principles of Management	3
	ME	F217	Applied Thermodynamics	4	ME	F218	Advanced Mechanics of Solids	2
			Humanities Electives	3(min)	ME	F219	Manufacturing Processes	4
					ME	F220	Heat Transfer	4
					ME	F221	Mechanisms and Machines	3
							Humanities Electives	3(min)
				19(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	1 to 4			Open/Humanities Electives	3 to 6
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			Discipline Electives	6(min)			Discipline Electives	3(min)
				17/20				**18/21**
IV			Open Electives	7to13	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				10/16				**15/20**

Discipline Core - 48 Units (16 Courses)

Discipline Electives - 12 Units (4 Courses)

Note: This is an operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Manufacturing Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BITS	F110	Engineering Graphics	2	BITS	F111	Thermodynamics	3
	BIO	F110	Biology Laboratory	1	BITS	F112	Technical Report Writing	2
	BIO	F111	General Biology	3	CS	F111	Computer Programming	4
	CHEM	F110	Chemistry Laboratory	1	EEE	F111	Electrical Sciences	3
	CHEM	F111	General Chemistry	3	MATH	F112	Mathematics II	3
	MATH	F111	Mathematics I	3	MATH	F113	Probability and Statistics	3
	PHY	F110	Physics Laboratory	1	ME	F112	Workshop Practice	2
	PHY	F111	Mechanics, Oscillations and Waves	3				
				17				**20**
II	MATH	F211	Mathematics III	3	BITS	F225	Environmental Studies	3
	MF	F211	Mechanics of Solids	3	ECON	F211	Principles of Economics	3
	MF	F213	Materials Science & Engineering	3			or	or
	MF	F217	Machine Drawing	2	MGTS	F211	Principles of Management	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F219	Operations Management	3
			Humanities Electives	3(min)	MF	F220	Metrology and Quality Assurance	3
					MF	F221	Mechanisms and Machines	3
					MF	F222	Casting, Forming and Welding	4
							Humanities Electives	3(min)
				18(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	2 to 5			Open/Humanities Electives	2 to 5
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			Discipline Electives	6(min)	MF	F320	Engineering Optimization	3
							Discipline Electives	3(min)
				19/22				**17/20**
IV			Open Electives	7 to 13	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				10/16				**15/20**

Discipline Core - 48 Units (15 Courses)
Discipline Electives - 12 Units (4 Courses)

Note: This is an operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B. Pharm.Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	PHA	F211	Pharmaceutical Analysis	3	MGTS	F211	Principles of Management	3
	PHA	F214	Anatomy, Physiology & Hygiene	3			Humanities Electives	3(min)
					PHA	F241	Pharmaceutical Chemistry	3
	PHA	F216	Pharmaceutical Formulations I	3	PHA	F242	Biological Chemistry	3
	PHA	F217	Pharmaceutical Microbiology	3	PHA	F243	Industrial Pharmacy	3
	BITS	F225	Environmental Studies	3	PHA	F244	Physical Pharmacy	3
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I**				**(for PS Option Only)**			
III			Open/Humanities Electives	2 to 5			Open/Humanities Electives	4 to 6
	PHA	F311	Pharmacology I	3	PHA	F341	Pharmacology II	3
	PHA	F312	Medicinal Chemistry I	3	PHA	F342	Medicinal Chemistry II	3
	PHA	F313	Instrumental Methods of Analysis	4	PHA	F343	Forensic Pharmacy	2
	PHA	F315	Pharmaceutical Formulations II	3	PHA	F344	Natural Drugs	3
			Discipline Electives	3(min)			Discipline Electives	3(min)
				18/21				**18/20**
IV			Open Electives	6 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				12/17				**15/20**

Discipline Core - 48 Units (16 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted during 2011-2013 as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B. Pharm. Programme						
Year	**First Semester**		**U**	**Second Semester**		**U**
I	BIO F110	Biology Laboratory	1	BITS F114	General Mathematics II*	3
	BIO F111	General Biology	3	OR		
	CHEM F110	Chemistry Laboratory	1	MATH F112	Mathematics II	
	CHEM F111	General Chemistry	3	ME F112	Workshop Practice	2
	BITS F113	General Mathematics I*	3	CS F111	Computer Programming	4
	OR			PHA F214	Anatomy, Physiology, &	3
	MATH F111	Mathematics I			Hygiene	
	PHY F110	Physics Laboratory	1	PHA F216	Pharmaceutical Formulations I	3
	PHY F112	General Physics	3	BITS F112	Technical Report Writing	2
	OR			MGTS F211	Principles of Management	
	PHY F111	Mechanics, Oscillations and Waves		OR		3
				ECON F211	Principles of Economics	
	BITS F110	Engineering Graphics	2			
			17			**20**
II	Humanities Electives		3	Humanities Electives		3
	BITS F218	General Mathematics III*	3	BITS F111	Thermodynamics	3
	OR			PHA F241	Pharmaceutical Chemistry	3
	MATH F211	Mathematics III		MATH F113	Probability and Statistics	3
	PHA F211	Pharmaceutical Analysis	3	PHA F215	Introduction to Molecular	
	BITS F219	Process Engineering	3		Biology and Immunology	3
	PHA F242	Biological Chemistry	3	PHA F244	Physical Pharmacy	3
	PHA F217	Pharmaceutical Microbiology	3			
	BITS F225	Environmental Studies	3			
			21			**18**
Summer BITS F221 Practice School I (5 Units) Only for PS Option						
III	Open/Humanities Electives		2 to 5	Open/Humanities electives		4 to 6
	PHA F311	Pharmacology I	3	PHA F341	Pharmacology II	3
	PHA F312	Medicinal Chemistry I	3	PHA F342	Medicinal Chemistry II	3
	PHA F313	Instrumental Methods of Analysis	4	PHA F343	Forensic Pharmacy	2
				PHA F344	Natural Drugs	3
	PHA F315	Pharmaceutical Formulations II	3	Discipline Electives		3(min)
	Discipline Electives		3 (min)			
			18 /21			**18 /20**
IV	Open electives		6to11	BITS F412 Practice School II		20
	Discipline Electives		6 (min)	OR		
				BITS F421T Thesis (16) or Thesis (9) and Electives (6 to 9)		16 or 15 to 18
			12/17			**15/20**

Discipline Core -48 Units (16 Courses)

Discipline Electives- 12 Units (4 Courses)

* A student must pursue all three courses in one sequence only (i.e. either Mathematics I, Mathematics II, and Mathematics III, or General Mathematics, General Mathematics II, and General Mathematics III).

Note: This is operative pattern for the students who are admitted from August 2014 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. Biological Sciences Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	BIO	F211	Biological Chemistry	3	MGTS	F211	Principles of Management	3
	BIO	F213	Cell Biology	3			Humanities Electives	3(min)
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
	BITS	F225	Environmental Studies	3	BIO	F243	Genetics	3
					BIO	F244	Instrumental Methods of Analysis	4
				22(min)				**19(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	0 to 3
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
					BIO	F342	Immunology	3
	BIO	F312	Plant Physiology	3	BIO	F215	Biophysics	3
	BIO	F313	Animal Physiology	3			Discipline Electives	9(min)
			Discipline Electives	6(min)				
				18/21				**18/21**
IV			Open Electives	8 to14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				8/14				**15/20**

*****Discipline Core - 44 Units (14 Courses)

*Discipline Electives - 15 Units (min)-(4 Courses (min))

Note: *This is operative pattern for the students who are admitted from August 2013 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. Chemistry Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	CHEM	F211	Physical Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F212	Organic Chemistry I	3			Humanities Electives	3(min)
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	
	PHY	F212	Electromagnetic Theory I	3	CHEM	F242	Chemical Experimentation I	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F243	Organic Chemistry II	3
					CHEM	F244	Physical Chemistry III	3
					BITS	F225	Environmental Studies	3
				21(min)				**21(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	2 to 5			Open/Humanities Electives	2 to 5
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
					CHEM	F342	Organic Chemistry IV	3
	CHEM	F311	Organic Chemistry III	3	CHEM	F343	Inorganic Chemistry III	3
	CHEM	F312	Physical Chemistry IV	3			Discipline Electives	6(min)
			Discipline Electives	6(min)				
				18/21				**18/21**
IV			Open Electives	7 to13	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				7/13				**15/20**

Discipline Core-47 Units (15 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M. Sc. Economics Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
			Humanities Electives	3(min)			Humanities Electives	3(min)
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
	BITS	F225	Environmental Studies	3				
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
			Discipline Electives	6(min)			Discipline Electives	6(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				11/17				**15/20**

Discipline Core -42 Units (14 Courses)

Discipline Electives -18 Units(6 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. Mathematics Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	MATH	F212	Optimization	3	MGTS	F211	Principles of Management	3
	MATH	F213	Discrete Mathematics	3			Humanities Electives	3(min)
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
	BITS	F225	Environmental Studies	3	MATH	F243	Graphs & Networks	3
					MATH	F244	Measure & Integration	3
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities	
	MATH	F311	Introduction to Topology	3			Electives	0 to 3
	MATH	F312	Ordinary Differential		MATH	F341	Introduction to Functional	
			Equations	3			Analysis	3
	MATH	F313	Numerical Analysis	3	MATH	F342	Differential Geometry	3
			Discipline Electives	6	MATH	F343	Partial Differential Equations	3
							Discipline Electives	9
				18/21				**18/21**
IV			Open Electives	8 to14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				8/14				**15/20**

Discipline Core -42 Units (14 Courses)

Discipline Electives -15 Units (5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M. Sc. Physics Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	PHY	F211	Classical Mechanics	4	MGTS	F211	Principles of Management	3
	PHY	F212	Electromagnetic Theory I	3			Humanities Electives	3(min)
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
					PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
			Discipline Electives	6(min)	PHY	F344	Advanced Physics Laboratory	3
							Discipline Electives	3(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				11/17				**15/20**

*****Discipline Core - 45 Units (15 Courses)

*Discipline Electives - 15 Units (min)-4 Courses(min)

Note: *This is operative pattern for the students who are admitted from August 2014 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. General Studies – Communication and Media Studies Stream								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	GS	F221	Business Communication	3	MGTS	F211	Principles of Management	3
	GS	F222	Language Lab Practice	3			Humanities Electives	3(min)
	GS	F223	Introduction to Mass Communication	3	GS	F244	Reporting & Writing for Media	3
	GS	F224	Print & Audio Visual Advertising	3	GS	F241	Creative Writing	3
					GS	F245	Effective Public Speaking	3
	BITS	F225	Environmental Studies	3	GS	F243	Current Affairs	3
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	GS	F321	Mass Media Content & Design	3	GS	F342	Computer Mediated Communication	3
	GS	F322	Critical Analysis of Literature & Cinema	3	GS	F343	Short Film & Video Production	3
			Discipline Electives	9(min)			Discipline Electives	9(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				8/14				**15/20**

Discipline Core - 36 Units (12 Courses)

Discipline Electives - 21 Units(7 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. General Studies – Development Studies Stream								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
			Humanities Electives	3(min)			Humanities Electives	3(min)
	GS	F211	Modern Political Concepts	3	GS	F231	Dynamics of Social Change	3
	GS	F212	Environment, Development & Climate Change	3	GS	F232	Introductory Psychology	3
	GS	F213	Development Theories	3	GS	F233	Public Policy	3
	ECON	F211	Principles of Economics	3	GS	F234	Development Economics	3
	BITS	F225	Environmental Studies	3				
				21(min)				18(min)
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	0 to 3
	GS	F311	Introduction to Conflict Management	3	GS	F331	Techniques in Social Research	3
	GS	F312	Applied Philosophy	3	GS	F332	Contemporary India	3
			Discipline Electives	9(min)	GS	F333	Public Administration	3
					GS	F334	Global Business Technology & Knowledge Sharing	3
							Discipline Electives	6(min)
				18/21				**18/21**
IV			Open Electives	8 to 14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				8/14				**15/20**

Discipline Core - 42 Units (14 Courses)

Discipline Electives - 15 Units (5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Pattern 1 Semester-wise Pattern for Composite Dual Degree Programmes (Option A: Duration 10 Sem.)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations		BITS	F111	Thermodynamics	3
	BITS	F110	and Waves	3				
			Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			First Discipline Core				or	
			Courses	13 to 17	MGTS	F211	Principles of Management	
			Electives	3 to 6			First Discipline Core	
							Courses	13 to 17
							Electives	3 to 6
				23/24				**23/24**
Summer	**BITS F221 Practice School – I(for PS Option Only)**							
III			Second Discipline Core				Second Discipline Core	
			courses	12 to 16			Courses	12 to 16
			First Discipline Courses-Core/Elective	7 to 11			First Discipline Courses – Core / Elective	7 to 11
				23/24				**23/24**
IV			First Discipline Elective Courses	3 to 10			First Discipline Elective Courses	3to10
			Second Discipline Courses – Core + Elective	14 to 18			Second Discipline Courses - Core + Elective	14 to 18
							Electives (0 to 6)	0 to 6
				23/24				**23/24**
V			Electives	5 to 9	BITS	F412	Practice School-II	20
	BITS	F423T	Thesis	9			or	or
					BITS	F421T	Thesis	16

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Pattern 2	**Semester-wise Pattern for Composite Dual Degree Programmes (Option B: Duration 10 Sem. and a Summer Term)**							
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	4
	BITS	F110	Engineering Graphics(2)	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	
							or	
			First Discipline Core Courses	13 to 17	MGTS	F211	Principles of Management	3
			Electives	3 to 6			First Discipline Core Courses	13 to 17
							Electives	3 to 6
				23/24				**23/24**
Summer	**BITS F221 Practice School – I(for PS Option Only)**							
III			Second Discipline Core Courses	12 to 16			Second Discipline Core Courses	12 to 16
			First Discipline Courses - Core / Elective	7 to 11			First Discipline Courses - Core / Elective	7 to 11
				23/24				**23/24**
IV			First Discipline Elective Courses	3/10			First Discipline Elective Courses	3 to 10
			Second Discipline Courses – Core + Elective	14 to 18			Second Discipline Courses - Core + Elective	14 to 18
			Electives	0 to 6			Electives	0 to 6
				23/24				**23/24**
Summer			Electives	5/9				
V	BITS	F412	Practice School - II	20	BITS	F413	Practice School - II	20
			or	or			or	or
	BITS	F421 T	Thesis	16	BITS	F422	Thesis	16

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Pattern 3 Semesterwise Pattern for Dual Degree (Duration 11 Sem.)							
Year	**First Semester**		**U**	**Second Semester**			**U**
I	BIO F110	Biology laboratory	1	MATH F112	Mathematics II		3
	BIO F111	General Biology	3	ME F112	Workshop Practice		2
	CHEMF110	Chemistry Laboratory	1	CS F111	Computer Programming		4
	CHEM F111	General Chemistry	3	EEE F111	Electrical Sciences		3
	MATH F111	Mathematics I	3	BITS F112	Technical Report Writing		2
	PHY F110	Physics Laboratory	1	MATH F113	Probability and Statistics		3
	PHY F111	Mechanics, Oscillations and Waves	3	BITS F111	Thermodynamics		3
	BITS F110	Engineering Graphics	2				
			17				**20**
II	MATH F211	Mathematics III	3	ECON F211	Principles of Economics		13
		First Discipline Core Courses	13 to 17		or		
				MGTS F211	Principles of Management		
		Electives	3 to 6		First Discipline Core Courses		13 to 17
					Electives		3 to 6
			21/22				**21/22**
Summer	**BITS F221 Practice School – I (for PS Option Only)**						
III		Second Discipline Core courses	12 to 16		Second Discipline Core		
		First Discipline Courses -			Courses		12 to 16
		Core/Elective	7 to 10		First Discipline Courses – Core / Elective		7to11
			21/22				**21/22**
IV		First Discipline Elective Courses	3 to 10		First Discipline Elective Courses		3 to10
		Second Discipline Courses – Core+Elective	14 to 18		Second Discipline Courses - Core + Elective		14 to 18
		Electives	0 to 6		Electives		0 to 6
			21/22				**21/22**
V		Electives	17 to 23	BITS F412	Practice School-II		20
					or		or
				BITS F421T	Thesis		16
VI	BITS F413	Practice School-II	20				
		or	or				
	BITS F422T	Thesis	16				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Chemical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics/	3
	BIO	F211	Biological Chemistry	3			Principles of Management	
	BIO	F213	Cell Biology	3	BIO	F241	Ecology & Environmental	
	BIO	F212	Microbiology	4			Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to	
			Humanities Elective	3			Bioinformatics	3
	BITS	F225	Environmental Studies	3	BIO	F243	Genetics	3
					BIO	F244	Instrumental Methods of	
							Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA	3	BIO	F341	Developmental Biology	3
			Technology		BIO	F342	Immunology	3
	BIO	F312	Plant Physiology	3	BIO	F215	Biophysics	3
	BIO	F313	Animal Physiology	3	CHE	F241	Heat Transfer	3
	CHE	F211	Chemical Process Calculations	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F212	Fluid Mechanics	3	CHE	F243	Material Science &	
	CHE	F214	Engineering Chemistry	3			Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				21				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering		CHE	F342	Process Dynamics & Control	3
			Laboratory I	3	CHE	F343	Process Design Principles II	3
	CHE	F313	Separation Processes II	3			First Discipline Electives	9
	CHE	F314	Process Design Principles I	3			Second Discipline Electives	6
			First Discipline Electives	6				
			Second Discipline Electives	3				
				21				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412		Practice School - Ii	20
	BITS F423T		Thesis	9				
				15				**20**

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Civil)									
Year	**First Semester**				**U**	**Second Semester**			**U**
I	Same as First degree Programme					Same as First degree Programme			
	First Semester				**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III		3	ECON	F211	Principles of Economics	
	BIO	F211	Biological Chemistry		3			or	
	BIO	F213	Cell Biology		3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology		4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology		3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective		3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies		3	BIO	F244	Instrumental Methods of Analysis	4
								Humanities Electives	5
					22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**								
	First Semester				**U**	**Second Semester**			**U**
III	BIO	F311	Recombinant DNA Technology		3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology		3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology		3	BIO	F215	Biophysics	3
	CE	F211	Mechanics of Solids		3	CE	F241	Analysis of structures	3
	CE	F231	Fluid Mechanics		3	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials		4	CE	F243	Soil Mechanics	4
	CE	F213	Surveying		4	CE	F244	Highway Engineering	4
					23				**23**
	First Semester				**U**	**Second Semester**			**U**
IV	CE	F320	Design of Reinforced Concrete Structures		3	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering		4	CE	F321	Engineering Hydrology	**3**
	CE	F313	Foundation Engineering		3	CE	F343	Design of Steel Structures	3
			First Discipline Electives		6			First Discipline Electives	9
			Second Discipline Electives		6			Second Discipline Electives	3
					22				**22**
V	**First Semester**				**U**	**Second Semester**			**U**
	Second Discipline Electives				3	BITS F412 Practice School - II			20
	BITS F423T		Thesis		9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes
(M.Sc. Biological Sciences with B.E. Computer Science)

Year	First Semester			U	Second Semester			U
I	Same as First degree Programme				Same as First degree Programme			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
					BIO	F243	Genetics	3
			Humanities Elective	3	BIO	F244	Instrumental Methods of Analysis	4
	BITS	F225	Environmental Studies	3			Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
	First Semester			**U**	**Second Semester**			**U**
III	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F222	Discrete Structures for Computer Science	3	CS	F211	Data Structures & Algorithms	4
	CS	F213	Object Oriented Programming	4				
				23				**21**
	First Semester			**U**	**Second Semester**			**U**
IV	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			First Discipline Elective	9
			First Discipline Electives	6			Second Discipline Electives	3
			Second Discipline Electives	3				
				21				**22**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412		Practice School - II	20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Electrical & Electronics)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	`5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	EEE	F212	Electromagnetic Theory	3	EEE	F243	Signals and Systems	3
	EEE	F211	Electrical Machines	4	EEE	F244	Microelectronic Circuits	3
	EEE	F214	Electronic Devices	3	EEE	F241	Microprocessors & Interfacing	4
	EE	F215	Digital Design	4	EEE	F242	Control Systems	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or	or	EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2			First Discipline Electives	6
	EEE	F313	Analog & Digital VLSI Design	3			Second Discipline Elective	4
			First Discipline Electives	3				
			Second Discipline Electives	8				
				20/21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Electronics & Communication)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
					BIO	F243	Genetics	3
			Humanities Elective	3	BIO	F244	Instrumentation of Analysis	4
	BITS	F225	Environmental Studies	3			Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	ECE	F212	Electromagnetic Theory	3	ECE	F241	Microprocessors & Interfacing	4
	ECE	F215	Digital Design	4	ECE	F242	Control Systems	3
	ECE	F211	Electrical Machines	4	ECE	F243	Signals and Systems	3
	ECE	F214	Electronic Devices	3	ECE	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	3			First Discipline Elective	6
			Second Discipline Electives	7			Second Discipline Electives	5
				21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	INSTR	F212	Electromagnetic Theory	3	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F215	Digital Design	4	INSTR	F242	Control Systems	3
	INSTR	F211	Electrical Machines	4	INSTR	F243	Signals & Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
					INSTR	F342	Power Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F343	Industrial Instrumentation & Control	3
	INSTR	F313	Analog & Digital VLSI Design	3			First Discipline Electives	6
			First Discipline Electives	9			Second Discipline Electives	4
			Second Discipline Electives	3				
				22				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			5	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Manufacturing)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
	MF	F213	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
				21				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			First Discipline Electives	9	MF	F320	Engineering Optimization	3
			Second Discipline Elective	3			First Discipline Electives	6
							Second Discipline Elective	3
				23				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Mechanical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
	First Semester			**U**	**Second Semester**			**U**
III	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F213	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				22				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	9			First Discipline Electives	6
			Second Discipline Electives	3			Second Discipline Electives	3
				22				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Chemical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
					CHEM	F342	Organic Chemistry IV	3
	CHEM	F311	Organic Chemistry III	3	CHEM	F343	Inorganic Chemistry III	3
	CHEM	F312	Physical Chemistry IV	3	CHE	F241	Heat Transfer	3
III	CHE	F211	Chemical Process Calculations	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F212	Fluid Mechanics	3	CHE	F243	Material Science & Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				19				**22**
	First Semester			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering	
	CHE	F312	Chemical Engineering Laboratory I	3			Laboratory II	3
IV	CHE	F313	Separation Processes II	3	CHE	F342	Process Dynamics & Control	3
	CHE	F314	Process Design Principles I	3	CHE	F343	Process Design Principles II	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	3			Second Discipline Electives	6
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6				
	BITS	F423T	Thesis	9	BITS F412 Practice School - II			20

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Civil)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	**F231**	**Fluid Mechanics**	**3**	CE	F242	Construction Planning & Technology	3
	CE	**F230**	**Civil Engineering Materials**	**4**	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				24				**24**
	First Semester			**U**	**Second Semester**			**U**
IV	**CE**	**F320**	**Design of Reinforced Concrete Structures**	**3**	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	**CE**	**F321**	**Engineering Hydrology**	**3**
	CE	F313	Foundation Engineering	3				
			First Discipline Electives	6	CE	F343	Design of Steel Structures	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	6
				19				**22**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes
(M.Sc. Chemistry with B.E. Computer Science)

Year	First Semester			U	Second Semester			U
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F222	Discrete Structures For Computer Science	3	CS	F211	Data Structures & Algorithms	4
	CS	F213	Object Oriented Programming	4				
				24				**22**
	First Semester			**U**	**Second Semester**			**U**
	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of	
	CS	F342	Computer Architecture	4			Algorithms	3
IV	CS	F301	Principles of		CS	F303	Computer Networks	4
			Programming Languages	2			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	3
			Second Discipline Electives	3				
				21				**19**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Electrical & Electronics)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3		F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
					CHEM		Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	EEE	F211	Electrical Machines	4	EEE	F243	Signals and Systems	3
	EEE	F214	Electronic Devices	3	EEE	F244	Microelectronic Circuits	3
	EEE	F215	Digital Design	4	EEE	F241	Microprocessors & Interfacing	4
					EEE	F242	Control Systems	3
				21				**23**
	First Semester			**U**	**Second Semester**			**U**
	EEE	F311	Communication	4	EEE	F341	Analog Electronics	4
			Systems		EEE	F342	Power Electronics	4
	MATH	F212	Optimization	3	EEE	F312	Power Systems	3
			or				First Discipline Elective	6
IV	ME	F344	Engineering Optimization	2			Second Discipline Elective	4
	EEE	F313	Analog & Digital VLSI Design	3				
			First Discipline Electives	6				
			Second Discipline Electives	5				
				20/21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes
M.Sc. Chemistry with B.E. Electronics & Communication

Year	First Semester			U	Second Semester			U
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	ECE	F215	Digital Design	4	ECE	F241	Microprocessors &	
	ECE	F211	Electrical Machines	4			Interfacing	4
	ECE	F214	Electronic Devices	3	ECE	F242	Control Systems	3
					ECE	F243	Signals and Systems	3
					ECE	F244	Microelectronic Circuits	3
				21				**23**
	First Semester			**U**	**Second Semester**			**U**
IV	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	4			Second Discipline Electives	5
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Electronics & Instrumentation)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3	MGTS	F211	or	
	CHEM	F212	Organic Chemistry I	3			Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	INSTR	F215	Digital Design	4	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F211	Electrical Machines	4	INSTR	F242	Control Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F243	Signals & Systems	3
					INSTR	F244	Microelectronic Circuits	3
				21				**23**
	First Semester			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments &		INSTR	F341	Analog Electronics	4
			Instrumentation Technology	4	INSTR	F342	Power Electronics	4
IV	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F343	Industrial Instrumentation & Control	3
	INSTR	F313	Analog & Digital VLSI Design	3			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	4
			Second Discipline Electives	5				
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Manufacturing)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
	MF	F213	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
				22				**23**
	First Semester			**U**	**Second Semester**			**U**
IV	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
					MF	F320	Engineering Optimization	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Elective	6			Second Discipline Elective	3
				23				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes
(M.Sc. Chemistry with B.E. Mechanical)

Year	First Semester			U	Second Semester			U
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F213	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				23				**23**
	First Semester			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
IV	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	6				
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	3
				19				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Chemical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
			First Discipline Elective	3			First Discipline Elective	3
	CHE	F211	Chemical Process Calculations	3	CHE	F241	Heat Transfer	3
	CHE	F212	Fluid Mechanics	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F214	Engineering Chemistry	3	CHE	F243	Material Science & Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				24				**24**
	First Semester			**U**	**Second Semester**			**U**
IV	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F342	Process Dynamics & Control	3
	CHE	F313	Separation Processes II	3	CHE	F343	Process Design Principles II	3
	CHE	F314	Process Design Principles I	3			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	3				
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Civil)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	F231	Fluid Mechanics	**3**	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials	**4**	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				24				**24**
	First Semester			**U**	**Second Semester**			**U**
IV	CE	F320	Design of Reinforced Concrete Structures	**3**	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	CE	F321	Engineering Hydrology	**3**
	CE	F313	Foundation Engineering	3				
			First Discipline Electives	6	CE	F343	Design of Steel Structures	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	6
				19				**22**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes
(M.Sc. Economics with B.E. Computer Science)

Year	First Semester			U	Second Semester			U
I	Same as First degree Programme				Same as First degree Programme			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F222	Discrete Structures for Computer Science	3	CS	F211	Data Structures & Algorithms	4
	CS	F213	Object Oriented Programming	4				
				23				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	6				
				24				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Electrical & Electronics)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Electives	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	EEE	F212	Electromagnetic Theory	3	EEE	F243	Signals and Systems	3
	EEE	F211	Electrical Machines	4	EEE	F244	Microelectronic Circuits	3
	EEE	F214	Electronic Devices	3	EEE	F241	Microprocessors & Interfacing	4
	EEE	F215	Digital Design	4	EEE	F242	Control Systems	3
				23				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or		EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2			First Discipline Electives	6
	EEE	F313	Analog & Digital VLSI Design	3			Second Discipline Elective	4
			First Discipline Electives	6				
			Second Discipline Electives	8				
				23/24				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Electronics & Communication)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	ECE	F212	Electromagnetic Theory	3	ECE	F241	Microprocessors & Interfacing	4
	ECE	F215	Digital Design	4	ECE	F242	Control Systems	3
	ECE	F211	Electrical Machines	4	ECE	F243	Signals and Systems	3
	ECE	F214	Electronic Devices	3	ECE	F244	Microelectronic Circuits	3
				23				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields &		ECE	F343	Communication Networks	3
			Microwave Engineering	3			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	5
			Second Discipline Electives	7				
				24				**21**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	INSTR	F212	Electromagnetic Theory	3	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F215	Digital Design	4	INSTR	F242	Control Systems	3
	INSTR	F211	Electrical Machines	4	INSTR	F243	Signals & Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F342	Power Electronics	4
	INSTR	F313	Analog & Digital VLSI Design	3	INSTR	F343	Industrial Instrumentation & Control	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	8			Second Discipline Electives	4
				24				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
	MF	F213	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
							First Discipline Elective	3
				21				**25**
IV	**First Semester**			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
					MF	F320	Engineering Optimization	3
			First Discipline Electives	6			First Discipline Elective	3
			Second Discipline Electives	6			Second Discipline Electives	6
				23				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Mechanical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
					ECON	F243	Macroeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F244	Economics of Growth & Development	3
	ECON	F214	Economic Environment of Business	3			Humanities Electives	5
			Humanities Electives	3				
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F213	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				22				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	6			Second Discipline Electives	6
				22				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412		Practice School - II	20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Chemical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	CHE	F211	Chemical Process Calculations	3	CHE	F241	Heat Transfer	3
	CHE	F212	Fluid Mechanics	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F214	Engineering Chemistry	3	CHE	F243	Material Science & Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				21				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F342	Process Dynamics & Control	3
	CHE	F313	Separation Processes II	3	CHE	F343	Process Design Principles II	3
	CHE	F314	Process Design Principles I	3			First Discipline Electives	9
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	3				
				21				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Civil Engineering)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	F231	Fluid Mechanics	**3**	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials	**4**	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				23				**23**
	First Semester			**U**	**Second Semester**			**U**
IV	CE	F320	Design of Reinforced Concrete Structures	**3**	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	CE	F321	Engineering Hydrology	**3**
	CE	F313	Foundation Engineering	3	CE	F343	Design of Steel Structures	3
			First Discipline Electives	6			First Discipline Electives	9
			Second Discipline Electives	3			Second Discipline Electives	3
				19				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Computer Science)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional	
	MATH	F312	Ordinary Differential Equations	3			Analysis	3
					MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F213	Object Oriented Programming	4	CS	F211	Data Structures & Algorithms	4
				20				**21**
	First Semester			**U**	**Second Semester**			**U**
IV	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			Fist Discipline Elective	6
			First Discipline Electives	3			Second Discipline Electives	6
			Second Discipline Electives	6				
				21				**22**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Electrical & Electronics)							
Year	**First Semester**		**U**	**Second Semester**			**U**
I	**Same as First degree Programme**			**Same as First degree Programme**			
	First Semester		**U**	**Second Semester**			**U**
	MATH F211	Mathematics III	3	ECON F211	Principles of Economics		3
	MATH F212	Optimization	3		or		
	MATH F213	Discrete Mathematics	3	MGTS F211	Principles of Management		3
	MATH F214	Elementary Real Analysis	3	MATH F241	Mathematical Methods		3
II	MATH F215	Algebra I	3	MATH F242	Operations Research		3
				MATH F243	Graphs & Networks		3
		Humanities Elective	3	MATH F244	Measure & Integration		3
	BITS F225	Environmental Studies	3				
					Humanities Electives		5
			21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**						
	First Semester		**U**	**Second Semester**			**U**
	MATH F311	Introduction to Topology	3	MATH F341	Introduction to Functional		
	MATH F312	Ordinary Differential Equations	3		Analysis		3
	MATH F313	Numerical Analysis	3	MATH F342	Differential Geometry		3
	EEE F212	Electromagnetic Theory	3	MATH F343	Partial Differential Equations		3
III	EEE F211	Electrical Machines	4	EEE F243	Signals and Systems		3
	EEE F214	Electronic Devices	3	EEE F244	Microelectronic Circuits		3
	EEE F215	Digital Design	4	EEE F241	Microprocessors &		
					Interfacing		4
				EEE F242	Control Systems		3
			23				**22**
	First Semester		**U**	**Second Semester**			**U**
	EEE F311	Communication Systems	4	EEE F341	Analog Electronics		4
	EEE F313	Analog & Digital VLSI Design	3	EEE F342	Power Electronics		4
				EEE F312	Power Systems		3
IV		First Discipline Electives	6		Fist Discipline Elective		6
		Second Discipline Electives	8		Second Discipline Elective		4
			21				**21**
	First Semester		**U**	**Second Semester**			**U**
V	First Discipline Electives		3	BITS F412 Practice School - II			20
	BITS F423T	Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Electronics & Communication)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
II	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
					MATH	F243	Graphs & Networks	3
			Humanities Elective	3	MATH	F244	Measure & Integration	3
	BITS	F225	Environmental Studies	3			Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
III	ECE	F212	Electromagnetic Theory	3	ECE	F241	Microprocessors & Interfacing	4
	ECE	F215	Digital Design	4	ECE	F242	Control Systems	3
	ECE	F211	Electrical Machines	4	ECE	F243	Signals and Systems	3
	ECE	F214	Electronic Devices	3	ECE	F244	Microelectronic Circuits	3
				23				**22**
	First Semester			**U**	**Second Semester**			**U**
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
V	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	3			First Discipline Electives	6
			Second Discipline Electives	7			Second Discipline Electives	5
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	INSTR	F212	Electromagnetic Theory	3	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F215	Digital Design	4	INSTR	F242	Control Systems	3
	INSTR	F211	Electrical Machines	4	INSTR	F243	Signals & Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F342	Power Electronics	4
	INSTR	F313	Analog & Digital VLSI Design	3	INSTR	F343	Industrial Instrumentation & Control	3
			First Discipline Electives	3			Fist Discipline Elective	6
			Second Discipline Electives	8			Second Discipline Electives	4
				21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
II	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
III	MF	F213	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
				21				**22**
	First Semester			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
IV	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			First Discipline Electives	6	MF	F320	Engineering Optimization	3
			Second Discipline Elective	6			First Discipline Electives	3
							Second Discipline Elective	6
				22				**21**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS	F423T	Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Mechanical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
II	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
III	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F213	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				22				**22**
	First Semester			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
IV	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	6			First Discipline Electives	9
			Second Discipline Electives	3			Second Discipline Electives	3
				19				**24**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Chemical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	CHE	F211	Chemical Process Calculations	3	PHY	F344	Advanced Physics Laboratory	3
	CHE	F212	Fluid Mechanics	3	CHE	F241	Heat Transfer	3
	CHE	F214	Engineering Chemistry	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F243	Material Science & Engineering	3
					CHE	F244	Separation Processes I	3
				21				**24**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F342	Process Dynamics & Control	3
	CHE	F313	Separation Processes II	3	CHE	F343	Process Design Principles II	3
	CHE	F314	Process Design Principles I	3			First Discipline Electives	9
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	3				
				21				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Civil)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	F231	Fluid Mechanics	**3**	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials	**4**	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				23				**23**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CE	**F320**	**Design of Reinforced Concrete Structures**	**3**	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	**CE**	**F321**	**Engineering Hydrology**	**3**
	CE	F313	Foundation Engineering	3				
			First Discipline Electives	9	CE	F343	Design of Steel Structures	3
			Second Discipline Electives	3	PHY	F344	Advanced Physics Laboratory	3
							First Discipline Electives	6
							Second Discipline Electives	3
				22				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Computer Science)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	CS	F215	Digital Design	4	PHY	F344	Advanced Physics Laboratory	3
	CS	F214	Logic in Computer Science	3	CS	F241	Microprocessors & Interfacing	4
	CS	F222	Discrete Structures For Computer Science	3	CS	F212	Database Systems	4
	CS	F213	Object Oriented Programming	4	CS	F211	Data Structures & Algorithms	4
				23				**24**
	First Semester			**U**	**Second Semester**			**U**
IV	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			First Discipline Electives	9
			First Discipline Electives	6			Second Discipline Electives	3
			Second Discipline Electives	3				
				21				**22**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Electrical & Electronics)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism &Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	EEE	F211	Electrical Machines	4	EEE	F243	Signals and Systems	3
	EEE	F214	Electronic Devices	3	EEE	F244	Microelectronic Circuits	3
	EEE	F215	Digital Design	4	EEE	F241	Microprocessors & Interfacing	4
					EEE	F242	Control Systems	3
				20				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or		EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2	PHY	F344	Advanced Physics Laboratory	3
	EEE	F313	Analog & Digital VLSI Design	3			First Discipline Electives	6
			First Discipline Electives	9			Second Discipline Electives	4
			Second Discipline Electives	5				
				23/24				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Electronics & Communication)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	ECE	F215	Digital Design	4	ECE	F241	Microprocessors & Interfacing	4
	ECE	F211	Electrical Machines	4	ECE	F242	Control Systems	3
	ECE	F214	Electronic Devices	3	ECE	F243	Signals and Systems	3
					ECE	F244	Microelectronic Circuits	3
				20				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	9	PHY	F344	Advanced Physics Laboratory	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	5
				23				**24**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			4	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism &Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	INSTR	F215	Digital Design	4	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F211	Electrical Machines	4	INSTR	F242	Control Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F243	Signals & Systems	3
					INSTR	F244	Microelectronic Circuits	3
				20				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F342	Power Electronics	4
	INSTR	F313	Analog & Digital VLSI Design	3	INSTR	F343	Industrial Instrumentation & Control	3
			First Discipline Electives	9	PHY	F344	Advanced Physics Laboratory	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	4
				22				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			5	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism &Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	MF	F211	Mechanics of Solids	3	PHY	F344	Advanced Physics Laboratory	3
	MF	F213	Materials Science & Engineering	3	MF	F219	Operations Management	3
	MF	F217	Machine Drawing	2	MF	F220	Metrology and Quality Assurance	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F221	Mechanisms and Machines	3
					MF	F222	Casting, Forming and Welding	4
				21				**25**
IV	**First Semester**			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			First Discipline Electives	9	MF	F320	Engineering Optimization	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	4
				23				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			5	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Mechanical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	ME	F211	Mechanics of Solids	3	PHY	F344	Advanced Physics Laboratory	3
	ME	F212	Fluid Mechanics	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F213	Materials Science & Engineering	3	ME	F219	Manufacturing Processes	4
	ME	F217	Applied Thermodynamics	4	ME	F220	Heat Transfer	4
					ME	F221	Mechanisms and Machines	3
				22				**25**
IV	**First Semester**			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	9			First Discipline Electives	6
			Second Discipline Electives	3			Second Discipline Electives	3
				22				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

List of Courses for B.E. / M.Sc. / B.Pharm. Programmes:

The list of Discipline Core Courses and Discipline Electives for all the first degree programmes is given below. To complete the requirements of Humanities electives, a student can take courses which are normally listed under Languages and Literature, History and Philosophy, Political and social Sciences, Fine arts and Professional Arts which have also been mentioned in subsequent paragraphs.

Course No	Course Title	L	P	U
BIOTECHNOLOGY				
CORE COURSES				
BIOT F211	Biological Chemistry	3	0	3
BIOT F212	Microbiology	3	1	4
BIOT F213	Cell biology	3	0	3
BIOT F215	Biophysics	3	0	3
BIOT F241	Genetic Engineering Techniques	1	3	4
BIOT F243	Genetics	3	0	3
BIOT F244	Instrumental Methods of Analysis	1	3	4
BIOT F245	Intro to Environmental Biotechnology	3	0	3
BIOT F311	Recombinant DNA Technology	3	0	3
BIOT F314	Industrial Microbiology and Bioprocess Engineering	2	2	4
BIOT F342	Immunology	3	0	3
BIOT F343	Experiments in Biotechnology	0	3	3
BIOT F344	Downstream Processing	2	1	3
DISCIPLINE ELECTIVE COURSES				
BIOT F242	Introduction to Bioinformatics	3	0	3
BIOT F345	Proteomics	3	0	3
BIOT F346	Genomics	3	0	3
BIOT F347	Immunotechnology	3	0	3
BIOT F352	Cell and Tissue Culture Technology	3	0	3
BIOT F413	Molecular Biology of the Cell	3	0	3
BIOT F416	Introduction to Pharmaceutical Biotechnology	3	0	3
BIOT F417	Biomolecular Modeling	3	0	3
BIOT F420	Introduction to Plant Biotechnology	3	0	3
BIOT F422	Nanobiotechnology	3	0	3
BIOT F423	Drug design and delivery	3	0	3
BIOT F424	Food Biotechnology	3	0	3
BITS F467	Bioethics and Biosafety	3	0	3

CHEMICAL ENGINEERING				
CORE COURSES		**L**	**P**	**U**
CHE F211	Chemical Process Calculations	3	0	3
CHE F212	Fluid Mechanics	3	0	3
CHE F213	Chemical Engineering Thermodynamics	3	0	3
CHE F214	Engineering Chemistry	3	0	3
CHE F241	Heat Transfer	3	0	3
CHE F242	Numerical Methods for Chemical Engineers	3	0	3
CHE F243	Material Science and Engg.	3	0	3
CHE F244	Separation Processes I	3	0	3
CHE F311	Kinetics and Reactor Design	3	0	3
CHE F312	Chemical Engineering Lab I	0	3	3
CHE F313	Separation Processes II	3	0	3
CHE F314	Process Design Principles I	3	0	3
CHE F341	Chemical Engineering Lab II	0	3	3
CHE F342	Process Dynamics and Control	3	0	3
CHE F343	Process Design Principles II	3	0	3
DISCIPLINE ELECTIVE COURSES				
BIO G671	Bioconversion Technology	3	2	5
BIOT F245	Introduction to Environmental Biotechnology	3	0	3
BIOT F344	Downstream processing	2	1	3
BITS F415	Introduction to MEMS	3	1	4
BITS F416	Introduction to Nanoscience	3	0	3
BITS F417	Microfluidics and its application			4
BITS F418	Introduction to Biomedical Engineering	3	1	4
BITS F429	Nanotechnology for Renewable Energy and Environment	3	1	4
CHE F411	Environmental Pollution Control	3	0	3
CHE F412	Process Equipment Design	3	0	3
CHE F413	Process Plant Safety	3	0	3
CHE F414	Transport Phenomena	3	0	3
CHE F415	Molecular and Statistical Thermodynamics	3	0	3
CHE F416	Process Plant Design Project I	-	-	3
CHE F417	Process Plant Design Project II	-	-	3
CHE F418	Modelling and Simulation in Chemical Engineering	3	0	3
CHE F419	Chemical Process Technology	3	0	3
CHE F421	Bio-chemical Engineering	3	0	3
CHE F422	Petroleum Refining Technology	3	0	3
CHE F423	Membrane Science and Engineering	3	0	3
CHE F424	Rheology of Complex Fluids	3	0	3

Course No	Course Title	L	P	U
CHE F433	Corrosion Engineering	3	0	3
CHE F471	Advanced Process Control	3	0	3
CHE F497	Atomic and Molecular Simulations			3
CHE F498	Colloids and Interface Engineering			3
CHE G511	Fluidization Engineering	3	1	4
CHE G512	Petroleum Refining and Petrochemicals	3	1	4
CHE G513	Environmental Management Systems	3	2	5
CHE G522	Polymer Technology	3	1	4
CHE G523	Mathematical Methods in Chemical Engineering			5
CHE G524	Introduction to Multiphase flow	3	1	4
CHE G526	Nuclear Engineering	3	1	4
CHE G527	Energy Conservation and Management	3	1	4
CHE G528	Introduction to Nanoscience & Technology	3	1	4
CHE G529	Pulp & Paper Technology	3	1	4
CHE G532	Alternate Energy Resources	3	1	4
CHE G533	Petroleum Product Characterization	3	2	5
CHE G551	Advanced Separation Technology	3	2	5
CHE G552	Advanced Transport Phenomena			5
CHE G554	Computational Fluid Dynamics			4
CHE G556	Electrochemical Engineering	3	1	4
CHE G557	Energy Systems Engineering			4
CHE G558	Chemical Process Optimization			4
CHE G568	Modeling and Simulation in Petroleum Refining			4
CHE G613	Advanced Mass Transfer	3	2	5
CHE G614	Advanced Heat Transfer	3	2	5
CHE G616	Petroleum Reservoir Engineering			5
CHE G617	Petroleum Refinery Engg.	3	2	5
CHE G618	Petroleum Downstream Processing	3	2	5
CHE G619	Process Intensification	3	2	5
CHE G620	Energy Integration Analysis	3	1	4
CHE G622	Advanced Chemical Engineering Thermodynamics			5
CHE G641	Reaction Engineering			5
CHEM F325	Polymer Chemistry	3	0	3
MST G521	Material Characterization Techniques	3	2	5

CIVIL ENGINEERING

CORE COURSES

		L	P	U
CE F211	Mechanics of Solids	3	0	3
CE F213	Surveying	3	1	4
CE F230	Civil Engineering Materials			4
CE F231	Fluid Mechanics			3
CE F241	Analysis of Structures	3	0	3
CE F242	Construction Planning and Technology	3	0	3
CE F243	Soil Mechanics	3	1	4
CE F244	Highway Engineering	3	1	4
CE F312	Hydraulics Engineering	3	1	4
CE F313	Foundation Engineering	3	0	3
CE F320	Design of Reinforced Concrete Structures			3
CE F321	Engineering Hydrology			3
CE F342	Water & Waste Water Treatment	3	1	4
CE F343	Design of Steel Structures	3	0	3

DISCIPLINE ELECTIVE COURSES

BITS F313	Multicriterion Decision Making in Engg. and Management	3	0	3
CE F323	Introduction to Environmental Engineering	3	0	3
CE F324	Numerical Analysis	3	0	3
CE F325	Fundamentals of Rock Mechanics	3	0	3
CE F345	Computational Geomechanics	3	0	3
CE F411	Operation Research for Engineers	3	0	3
CE F412	Disaster Management	3	0	3
CE F413	Advanced Structural Design	3	0	3
CE F415	Design of Prestressed Concrete Structure	3	0	3
CE F416	Computer Applications in Civil Engineering	3	1	4
CE F417	Applications of Artificial Intelligence in Civil Engg.	3	0	3
CE F419	Geotechnical Earthquake Engg. and Machine Foundation	3	0	3
CE F420	Introduction to Bridge Engineering	3	0	3
CE F421	Analysis and Design of FRP Reinforced Concrete Structures	3	0	3
CE F422	Urban Hydrology	2	1	3
CE F423	Green Buildings and Energy Conservation	3	0	3
CE F425	Airport, Railways and Waterways	3	0	3
CE F426	Geosynthetics and Reinforced Soil Structure	3	0	3

Course No	Course Title	L	P	U
CE F427	System Modeling and Analysis	3	0	3
CE F428	Earthquake Resistant Design and Construction	3	0	3
CE F429	Design of Foundation Systems	3	0	3
CE F430	Design of Advanced Concrete Structures	3	0	3
CE F431	Principles of Geographical Information Systems	3	1	4
CE F432	Structural Dynamics	3	0	3
CE F433	Remote Sensing and Image Processing	3	1	4
CE F434	Environmental Impact Assessment	3	0	3
CE F435	Introduction to Finite Element Methods	3	0	3
COMPUTER SCIENCE				
CORE COURSES		**L**	**P**	**U**
CS F211	Data Structures & Algorithms	3	1	4
CS F212	Database Systems	3	1	4
CS F213	Object Oriented Programming	3	1	4
CS F214	Logic in Computer Science	3	0	3
CS F215	Digital Design	3	1	4
CS F222	Discrete Structures for Computer Science	3	0	3
CS F241	Microprocessors & Interfacing	3	1	4
CS F301	Principles of Programming Languages	2	0	2
CS F303	Computer Networks	3	1	4
CS F342	Computer Architecture	3	1	4
CS F351	Theory of Computation	3	0	3
CS F363	Compiler Construction	2	1	3
CS F364	Design & Analysis of Algorithms	3	0	3
CS F372	Operating Systems	3	0	3
DISCIPLINE ELECTIVE COURSES				
BITS F311	Image Processing	3	0	3
BITS F312	Neural Networks and Fuzzy Logic	3	0	3
BITS F343	Fuzzy Logic and Applications	3	0	3
BITS F364	Human – Computer Interaction	3	0	3
BITS F386	Quantum Information and Computation	3	0	3
BITS F452	Blockchain Technology	3	0	3
BITS F453	Computational Learning Theory	3	0	3
BITS F454	Bio-Inspired Intelligence: Algorithms and Applications	3	0	3
BITS F463	Cryptography	3	0	3
BITS F464	Machine Learning	3	0	3
BITS F465	Enterprise Computing	3	1	4
BITS F466	Service Oriented Computing	3	1	4
CS F314	Software Development for Portable Devices	2	1	3
CS F315	Information and Communication Technologies and Development	3	0	3
CS F316	Quantum Architecture and Programming	3	0	3
CS F317	Reinforcement Learning	3	0	3
CS F320	Foundations of Data Science	3	0	3
CS F401	Multimedia Computing	3	0	3
CS F402	Computational Geometry	3	0	3
CS F407	Artificial Intelligence	3	0	3
CS F413	Internetworking Technologies	3	0	3
CS F415	Data Mining	3	0	3
CS F422	Parallel Computing	3	0	3
CS F424	Software for Embedded Systems	3	1	4
CS F425	Deep Learning	3	0	3
CS F426	Graph Mining	3	1	4
CS F427	Performance Analysis of Computer Networks	3	0	3
CS F428	Special topic in Computer Science	1	0	1
CS F429	Natural Language Processing	3	0	3
CS F441	Selected Topics from Computer Science	-	-	3
CS F444	Real Time Systems	3	0	3
CS F446	Data Storage Technologies and Networks	3	0	3
CS F468	Information Security Project	0	3	3
CS F469	Information Retrieval	3	0	3
CS G513	Network Security	3	1	4
CS G519	Social Media Analytics	3	1	4
CS G520	Advanced Data Mining	3	1	4
CS G527	Cloud Computing			5
IS F311	Computer Graphics	3	0	3
IS F341	Software Engineering	3	1	4
IS F462	Network Programming	3	0	3
MATH F231	Number Theory	3	0	3
MATH F421	Combinatorial Mathematics	3	0	3
MATH F441	Discrete Mathematical Structures	3	0	3
ELECTRICAL AND ELECTRONICS ENGINEERING				
CORE COURSES				
EEE F211	Electrical Machines	3	1	4
EEE F212	Electromagnetic Theory	3	0	3
EEE F214	Electronic Devices	3	0	3
EEE F215	Digital Design	3	1	4
EEE F241	Microprocessors and interfacing	3	1	4
EEE F242	Control Systems	3	0	3
EEE F243	Signals & Systems	3	0	3
EEE F244	Microelectronic Circuits	3	0	3

Course No	Course Title	L	P	U
EEE F311	Communication Systems	3	1	4
EEE F312	Power Systems	3	0	3
EEE F313	Analog & Digital VLSI Design	3	0	3
EEE F341	Analog Electronics	3	1	4
EEE F342	Power Electronics	3	1	4
MATH F212	Optimization	3	0	3
DISCIPLINE ELECTIVE COURSES				
BITS F312	Neural Networks and Fuzzy Logic	3	0	3
BITS F415	Introduction To MEMS	3	1	4
CS F213	Object Oriented Programming	3	1	4
CS F342	Computer Architecture	3	1	4
CS F372	Operating Systems	3	0	3
CS F451	Combinatorial Mathematics	3	0	3
CS G553	Reconfigurable Computing			5
ECE F312	EM Fields and Microwave Engineering Laboratory	0	1	1
ECE F343	Communication Networks	3	0	3
EEE F216	Electronic Devices Simulation Laboratory	0	2	2
EEE F245	Control System Laboratory	0	1	1
EEE F246	Electrical and Electronic Circuits Laboratory	0	2	2
EEE F312	EM Fields and Microwave Engineering	3	0	3
EEE F345	Power Apparatus & Networks	3	0	3
EEE F346	Data Communication Networks	2	0	2
EEE F348	FPGA Based System Design Laboratory	0	2	2
EEE F411	Internet of Things	3	1	4
EEE F414	Telecommunication Switching Systems & Networks	3	0	3
EEE F416	Digital Communication	3	0	3
EEE F417	Computer Based Control System	3	0	3
EEE F418	Modern Communication Technologies	3	0	3
EEE F419	Flexible and Stretchable Electronics	3	1	4
EEE F420	Biomedical Signal Processing	3	1	4
EEE F422	Modern Control Systems	3	0	3
EEE F424	Smart Grid for Sustainable Energy	3	0	3
EEE F425	Power System Analysis and control	3	0	3
EEE F426	Fiber Optics & Optoelectronics	3	0	3
EEE F427	Electric Power Utilization and Illumination	3	0	3
EEE F428	Energy Storage Systems	3	0	3
EEE F429	Smart Materials and Applications	3	1	4
EEE F430	Green Communications and Networks	3	0	3
EEE F431	Mobile Telecommunication Networks	3	0	3
EEE F432	Medical Instrumentation	3	0	3
EEE F433	Electromagnetic Fields & Waves	3	0	3
EEE F434	Digital Signal Processing	3	1	4
EEE F435	Digital Image Processing	3	0	3
EEE F436	Electromagnetic Compatibility	3	1	4
EEE F462	Advanced Power Systems	3	0	3
EEE F472	Satellite Communication	3	0	3
EEE F473	Wind Electrical Systems	3	0	3
EEE F474	Antenna Theory and Design	3	1	4
EEE F475	Special Electrical Machines	3	1	4
EEE F476	Switchgear and Protection	3	1	4
EEE F477	Modelling of Field-Effect NanoDevices	3	0	3
EEE F478	Power Systems Laboratory	0	2	2
EEE G512	Embedded System Design	3	1	4
EEE G626	Hardware Software Co-Design			4

ELECTRONICS AND COMMUNICATION ENGINEERING				
CORE COURSES		**L**	**P**	**U**
ECE F211	Electrical Machines	3	1	4
ECE F212	Electromagnetic Theory	3	0	3
ECE F214	Electronic Devices	3	0	3
ECE F215	Digital Design	3	1	4
ECE F241	Microprocessors and interfacing	3	1	4
ECE F242	Control Systems	3	0	3
ECE F243	Signals & Systems	3	0	3
ECE F244	Microelectronic Circuits	3	0	3
ECE F311	Communication Systems	3	1	4
ECE F314	Electromagnetic Fields & Microwave Engineering	3	0	3
ECE F341	Analog Electronics	3	1	4
ECE F343	Communication Networks	3	0	3
ECE F344	Information Theory & Coding	3	0	3
ECE F434	Digital Signal Processing	3	1	4
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F415	Introduction to MEMS	3	1	4
BITS F463	Cryptography	3	0	3
CS F213	Object Oriented Programming	3	1	4
CS F342	Computer Architecture	3	1	4
CS F372	Operating Systems	3	0	3
CS F451	Combinatorial Mathematics	3	0	3
CS G553	Reconfigurable Computing			5
ECE F216	Electronic Devices Simulation Laboratory	0	2	2
ECE F312	EM Fields and Microwave Engineering Laboratory	0	1	1

Course No	Course Title	L	P	U
ECE F414	Telecommunication Switching Systems & Networks	3	0	3
ECE F416	Digital Communication	3	0	3
ECE F418	Modern Communication Technologies	3	0	3
ECE F424	Smart Grid for Sustainable Energy	3	0	3
ECE F428	Energy Storage Systems	3	0	3
ECE F429	Smart Materials and Applications	3	1	4
ECE F430	Green Communications and Networks	3	0	3
ECE F431	Mobile Telecommunication Networks	3	0	3
ECE F472	Satellite Communication	3	0	3
EEE F245	Control System Laboratory	0	1	1
EEE F246	Electrical and Electronic Circuits Laboratory	0	2	2
EEE F313	Analog & Digital VLSI Design	3	0	3
EEE F345	Power Apparatus & Networks	3	0	3
EEE F346	Data Communication Networks	2	0	2
EEE F348	FPGA Based System Design Laboratory	0	2	2
EEE F411	Internet of Things	3	1	4
EEE F417	Computer Based Control System	3	0	3
EEE F419	Flexible and Stretchable Electronics	3	1	4
EEE F420	Biomedical Signal Processing	3	1	4
EEE F422	Modern Control Systems	3	0	3
EEE F426	Fiber Optics and Optoelectronics	3	0	3
EEE F432	Medical Instrumentation	3	0	3
EEE F435	Digital Image Processing	3	0	3
EEE F436	Electromagnetic Compatibility	3	1	4
EEE F474	Antenna Theory and Design	3	1	4
EEE F475	Special Electrical Machines	3	1	4
EEE F476	Switchgear and Protection	3	1	4
EEE F477	Modelling of Field-Effect Nano Devices	3	0	3
EEE F478	Power Systems Laboratory	0	2	2
EEE G512	Embedded System Design	3	1	4
EEE G626	Hardware Software Co-Design			4
INSTR F412	Analysis Instrumentation	3	0	3

ELECTRONICS AND INSTRUMENTATION ENGINEERING CORE COURSES		L	P	U
INSTR F211	Electrical Machines	3	1	4
INSTR F212	Electromagnetic Theory	3	0	3
INSTR F214	Electronic Devices	3	0	3
INSTR F215	Digital Design	3	1	4
INSTR F241	Microprocessors and interfacing	3	1	4
INSTR F242	Control Systems	3	0	3
INSTR F243	Signals & Systems	3	0	3
INSTR F244	Microelectronic Circuits	3	0	3
INSTR F311	Electronic Instrumentation & Instrumentation Technology	3	1	4
INSTR F312	Transducers and Measurement Systems	3	0	3
INSTR F313	Analog & Digital VLSI Design	3	0	3
INSTR F341	Analog Electronics	3	1	4
INSTR F342	Power Electronics	3	1	4
INSTR F343	Industrial Instrumentation & Control	3	0	3

DISCIPLINE ELECTIVE COURSES		L	P	U
BITS F312	Neural Network & Fuzzy Logic	3	0	3
BITS F415	Introduction To MEMS	3	1	4
CS F213	Object Oriented Programming	3	1	4
CS F342	Computer Architecture	3	1	4
CS F372	Operating Systems	3	0	3
CS F451	Combinatorial Mathematics	3	0	3
CS G553	Reconfigurable Computing			5
ECE F312	EM Fields and Microwave Engineering Laboratory	0	1	1
ECE F314	Electromagnetic Fields & Microwave Engineering	3	0	3
EEE F245	Control System Laboratory	0	1	1
EEE F246	Electrical and Electronic Circuits Laboratory	0	2	2
EEE F311	Communication Systems	3	1	4
EEE F345	Power Apparatus & Networks	3	0	3
EEE F346	Data Communication Networks	2	0	2
EEE F348	FPGA Based System Design Laboratory	0	2	2
EEE F411	Internet of Things	3	1	4
EEE F417	Computer Based Control System	3	0	3
EEE F419	Flexible and Stretchable Electronics	3	1	4
EEE F420	Biomedical Signal Processing	3	1	4
EEE F422	Modern Control Systems	3	0	3
EEE F426	Fiber optics & Optoelectronics	3	0	3
EEE F427	Electric Power Utilization and Illumination	3	0	3
EEE F431	Mobile Telecommunication Networks	3	0	3
EEE F433	Electromagnetic Fields & Waves	3	0	3
EEE F434	Digital Signal Processing	3	1	4
EEE F435	Digital Image Processing (check number and description with BITS Image Processing)	3	0	3

Course No	Course Title	L	P	U
EEE F436	Electromagnetic Compatibility	3	1	4
EEE F472	Satellite Communication	3	0	3
EEE F474	Antenna Theory and Design	3	1	4
EEE F475	Special Electrical Machines	3	1	4
EEE F476	Switchgear and Protection	3	1	4
EEE F477	Modelling of Field-Effect Nano Devices	3	0	3
EEE F478	Power Systems Laboratory	0	2	2
EEE G512	Embedded System Design	3	1	4
EEE G626	Hardware Software Co-Design			4
INSTR F216	Electronic Devices Simulation Laboratory	0	2	2
INSTR F413	Advanced Process Control	3	0	3
INSTR F414	Telecommunication Switching Systems & Networks	3	0	3
INSTR F415	Digital Control	3	0	3
INSTR F419	Virtual Instrumentation	3	1	4
INSTR F420	Design of Instrumentation Systems	3	0	3
INSTR F422	Instrumentation for Petrochemical Industry	3	0	3
INSTR F424	Smart Grid for Sustainable Energy	3	0	3
INSTR F428	Energy Storage Systems	3	0	3
INSTR F429	Smart Materials and Applications	3	1	4
INSTR F430	Green Communications and Networks	3	0	3
INSTR F432	Medical Instrumentation	3	0	3
INSTR F473	Wind Electrical Systems	3	0	3
MANUFACTURING ENGINEERING				
CORE COURSES		**L**	**P**	**U**
MF F211	Mechanics of Solids	3	0	3
MF F213	Materials Science and Engineering	2	1	3
MF F217	Machine Drawing	0	2	2
MF F218	Transport Phenomena in Manufacturing	3	1	4
MF F219	Operations Management	3	0	3
MF F220	Metrology and Quality Assurance	2	1	3
MF F221	Mechanisms and Machines	3	0	3
MF F222	Casting, Forming and Welding	3	1	4
MF F314	Design of Machine Elements	3	0	3
MF F315	Automation and Control	3	1	4
MF F316	Machining and Machine Tools	3	1	4
MF F317	Computer Aided Design and Manufacturing	2	1	3
MF F318	Non Traditional Manufacturing Processes	3	0	3
MF F319	Supply Chain Management	3	0	3
MF F320	Engineering Optimization	3	0	3

Course No	Course Title	L	P	U
DISCIPLINE ELECTIVE COURSES				
BITS F415	Introduction To MEMS	3	1	4
ECON F411	Project Appraisal	3	0	3
ME F340	Introduction to Sports Engg.	3	0	3
ME F416	Reverse Engineering and Rapid Prototyping	3	0	3
ME F417	Advanced Metal Forming	3	0	3
ME F419	Total Product Integration Engineering	3	0	3
ME F424	Energy Management	3	0	3
ME F425	Additive Manufacturing	3	0	3
ME F426	Industry 4.0 in Manufacturing	3	0	3
ME F432	Computer Aided Manufacturing	2	1	3
ME F443	Quality Control Assurance and Reliability	3	0	3
ME F484	Automotive Technology	3	0	3
MF F411	Fluid Power Systems	3	1	4
MF F412	Automotive Systems	3	0	3
MF F413	Mechanical Vibrations and Acoustics	3	0	3
MF F414	Manufacturing Excellence	3	0	3
MF F418	Lean Manufacturing	3	0	3
MF F442	Advances in Materials Science	3	0	3
MF F453	Industrial Relations	3	0	3
MF F463	Maintenance and Safety	3	0	3
MF F471	Instrumentation and Control	3	0	3
MF F472	Precision Engineering	3	0	3
MF F473	Product Design and Development	3	0	3
MF F474	Product Design and Development Projects	0	0	3
MF F485	Sustainable Manufacturing	3	0	3
MECHANICAL ENGINEERING				
CORE COURSES		**L**	**P**	**U**
ME F211	Mechanics of Solids	3	0	3
ME F212	Fluid Mechanics	3	0	3
ME F213	Materials Science and Engineering	2	1	3
ME F217	Applied Thermodynamics	3	1	4
ME F218	Advanced Mechanics of Solids	2	0	2
ME F219	Manufacturing Processes	3	1	4
ME F220	Heat Transfer	3	1	4
ME F221	Mechanisms and Machines	3	0	3
ME F314	Design of Machine Elements	3	0	3
ME F315	Advanced Manufacturing Processes	2	1	3
ME F316	Manufacturing Management	2	0	2
ME F317	Engines, Motors, and Mobility	2	0	2
ME F318	Computer-Aided Design	1	2	3
ME F319	Vibrations and Control	3	0	3
ME F320	Engineering Optimization	3	0	3

Course No	Course Title	L	P	U
ME F341	Prime Movers & Fluid Machines	2	1	3
DISCIPLINE ELECTIVE COURSES				
AN F311	Principles of Aerodynamics	3	0	3
AN F312	Aircraft Propulsion	3	0	3
AN F313	Flight Mechanics and Controls	3	0	3
AN F314	Introduction to Flight	3	0	3
AN F315	Aircraft Structures	3	0	3
BITS F327	Artificial Intelligence for Robotics	2	1	3
BITS F415	Introduction to MEMS	3	1	4
DE G513	Tribology	3	2	5
DE G514	Fracture Mechanics	3	2	5
DE G531	Product Design	3	2	5
ECE F242	Control Systems	3	0	3
ECON F411	Project Appraisal	3	0	3
EEE F242	Control Systems	3	0	3
INSTR F242	Control Systems	3	0	3
MATH F313	Numerical Analysis	3	0	3
ME F340	Introduction to Sports Engineering	3	0	3
ME F411	Fluid Power Systems	3	1	4
ME F413	Nonlinear Vibrations	3	0	3
ME F414	Fuel Cell Science and Technology			3*
ME F415	Gas Dynamics	3	0	3
ME F416	Reverse Engineering and Rapid Prototyping	3	0	3
ME F417	Advanced Metal Forming	3	0	3
ME F418	Rocket and Spacecraft Propulsion	3	0	3
ME F419	Total Product Integration Engg.	3	0	3
ME F420	Power Plant Engineering	3	0	3
ME F423	Microfluidics and Applications			4*
ME F424	Energy Management	3	0	3
ME F425	Additive Manufacturing	3	0	3
ME F426	Industry 4.0 in Manufacturing	3	0	3
ME F432	Computer Aided manufacturing	2	1	3
ME F433	Solar Thermal Process Engineering	3	1	4
ME F441	Automotive Vehicles	3	0	3
ME F443	Quality Control, Assurance and Reliability	3	0	3
ME F451	Mechanical Equipment Design	3	0	3
ME F452	Composite Materials & Design	3	0	3
ME F461	Refrigeration and Air conditioning	3	0	3
ME F472	Precision Engineering	3	0	3
ME F482	Combustion	3	0	3
ME F483	Wind Energy	3	0	3
ME F484	Automotive Technology	3	0	3
ME F485	Numerical Techniques for Fluid Flow and Heat Transfer	3	0	3
ME G511	Mechanism and Robotics	3	2	5
ME G512	Finite Element Methods	3	2	5
ME G514	Turbomachinery	3	2	5
ME G515	Computational Fluid Dynamics	3	2	5
ME G533	Conduction and Radiation Heat Transfer	3	2	5
ME G534	Convective Heat and Mass Transfer	3	2	5
MF F311	Mechatronics and Automation	2	1	3
MF F418	Lean Manufacturing	3	0	3
MF F421	Supply chain management			4
MF F485	Sustainable Manufacturing	3	0	3
MST G522	Advanced Composites	3	2	5
PHARMACY				
CORE COURSES		**L**	**P**	**U**
BITS F219	Process Engineering	2	1	3
PHA F211	Pharmaceutical Analysis	2	1	3
PHA F214	Anatomy, Physiology & Hygiene	2	1	3
PHA F215*	Introduction to Molecular Biology and Immunology	3	0	3
PHA F216	Pharmaceutical Formulations I	2	1	3
PHA F217	Pharmaceutical Microbiology	2	1	3
PHA F241	Pharmaceutical Chemistry	2	1	3
PHA F242	Biological Chemistry	2	1	3
PHA F243	Industrial Pharmacy	2	1	3
PHA F244	Physical Pharmacy	2	1	3
PHA F311	Pharmacology I	2	1	3
PHA F312	Medicinal Chemistry I	2	1	3
PHA F313	Instrumental Methods of Analysis	2	1	4
PHA F315	Pharmaceutical Formulations II	2	1	3
PHA F341	Pharmacology II	2	1	3
PHA F342	Medicinal Chemistry II	2	1	3
PHA F343	Forensic Pharmacy	2	-	2
PHA F344	Natural Drugs	2	1	3

*** To be offered to B.Pharm. students admitted in 2014 onwards in place of PHA F243**

DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F467	Bioethics and Biosafety	3	0	3
MATH F212	Optimization	3	0	3
PHA F316	Pharmaceutical Regulatory Science	3	0	3
PHA F317	Safety Pharmacology and Toxicology	3	0	3
PHA F413	Pharmaceutical Management and Quality Control	3	0	3

Course No	Course Title	L	P	U
PHA F414	Biopharmaceutics	3	0	3
PHA F415	Pathophysiology	3	0	3
PHA F416	Chemistry of Synthetic Drugs	3	0	3
PHA F417	Pharmacoeconomics	3	0	3
PHA F418	Biopharmaceutics and Pharmacokinetics	3	0	3
PHA F419	Herbal Drug Technology	3	0	3
PHA F422	Cosmetic Science	2	1	3
PHA F432	Hospital Pharmacy	3	0	3
PHA F441	Biochemical Engineering	3	0	3
PHA F442	Applied Pharmaceutical Chemistry	3	0	3
PHA F461	Phytochemistry	2	1	3
PHA G546	Pharmaceutical Biostatistics	3	0	3
BIOLOGICAL SCIENCES				
CORE COURSES		**L**	**P**	**U**
BIO F211	Biological Chemistry	3	0	3
BIO F212	Microbiology	3	1	4
BIO F213	Cell Biology	3	0	3
BIO F214	Integrated Biology	3	0	3
BIO F215	Biophysics	3	0	3
BIO F241	Ecology & Environmental Science	3	0	3
BIO F242	Introduction to Bioinformatics	3	0	3
BIO F243	Genetics	3	0	3
BIO F244	Instrumental Methods of Analysis	1	3	4
BIO F311	Recombinant DNA Technology	3	0	3
BIO F312	Plant Physiology	3	0	3
BIO F313	Animal Physiology	3	0	3
BIO F341	Developmental Biology	3	0	3
BIO F342	Immunology	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BIO F216	Water, Sanitation and Solid Waste Management	3	0	3
BIO F217	Laboratory for Water, Sanitation and Solid waste Management	1	2	3
BIO F231	Biology Project Laboratory			3
BIO F314	Conservation Biology	2	1	3
BIO F315	Applied Nutrition and Nutraceuticals	2	0	2
BIO F352	Cell and Tissue Culture Technology	3	1	4
BIO F411	Laboratory	0	3	3
BIO F413	Molecular Biology of Cell	3	0	3
BIO F417	Biomolecular Modelling	3	0	3
BIO F418	Genetic Engineering Techniques	1	3	4
BIO F419	Molecular Evolution	3	0	3
BIO F421	Enzymology	3	0	3

Course No	Course Title	L	P	U
BIO F431	Reproductive Physiology	3	0	3
BIO F441	Biochemical Engineering	3	0	3
BIO F451	Bioprocess Technology	3	0	3
BIO G512	Molecular Mechanism of Gene Expression	3	2	5
BIO G513	Microbial and Fermentation Technology	3	2	5
BIO G515	Stem Cell and Regenerative Biology	3	1	4
BIO G522	Interferon Technology	3	1	4
BIO G523	Advanced and Applied Microbiology	3	2	5
BIO G524	Animal Cell Technology	3	2	5
BIO G525	Environmental Biotechnology & Waste Mgnt	3	2	5
BIO G526	Cancer Biology	3	2	5
BIO G544	Bioremediation and biometallurgy	5	0	5
BIO G545	Molecular Parasitology and Vector Biology			5
BIO G561	Advances in Recombinant DNA Technology	3	2	5
BIO G570	Recent Developments in Biology	1	0	1
BIO G612	Human Genetics	3	2	5
BIO G631	Membrane and Liposome Technology	3	1	4
BIO G632	Transgenic Technology	3	2	5
BIO G642	Experimental Techniques		4	4
BIO G643	Plant Biotechnology	3	2	5
BIO G651	Protein and Enzyme Bioengineering	3	2	5
BIO G661	Gene Toxicology	3	1	4
BIO G671	Bioconversion Technology	3	2	5
BIOT F345	Proteomics	3	0	3
BIOT F346	Genomics	3	0	3
BIOT F347	Immunotechnology	3	0	3
BIOT F416	Introduction to Pharmaceutical Biotechnology	3	0	3
BIOT F422	Nanobiotechnology	3	0	3
BIOT F424	Food Biotechnology	3	0	3
BITS F418	Introduction to Biomedical Engineering	3	1	4
BITS F467	Bioethics and Biosafety	3	0	3
CHEM F212	Organic Chemistry I	3	0	3
CHEM F213	Physical Chemistry II	3	0	3
MATH F212	Optimization	3	0	3
CHEMISTRY				
CORE COURSES		**L**	**P**	**U**
CHEM F211	Physical Chemistry I	3	0	3
CHEM F212	Organic Chemistry I	3	0	3
CHEM F213	Physical Chemistry II	3	0	3
CHEM F214	Inorganic Chemistry I	3	0	3

Course No	Course Title	L	P	U
CHEM F241	Inorganic Chemistry II	3	0	3
CHEM F242	Chemical Experimentation I	0	3	3
CHEM F243	Organic Chemistry II	3	0	3
CHEM F244	Physical Chemistry III	3	0	3
CHEM F311	Organic Chemistry III	3	0	3
CHEM F312	Physical Chemistry IV	3	0	3
CHEM F313	Instrumental Methods of Analysis	3	1	4
CHEM F341	Chemical Experimentation II	0	4	4
CHEM F342	Organic Chemistry IV	3	0	3
CHEM F343	Inorganic Chemistry III	3	0	3
PHY F212	Electromagnetic Theory I	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
CHEM F223	Colloid and Surface Chemistry	3	0	3
CHEM F320	Introductory Computational Chemistry Laboratory	0	4	2
CHEM F323	Biophysical Chemistry	3	0	3
CHEM F324	Numerical Methods in Chemistry	3	3	4
CHEM F325	Polymer Chemistry	3	0	3
CHEM F326	Solid State Chemistry	3	0	3
CHEM F327	Electrochemistry: Fundamentals and Applications	3	0	3
CHEM F328	Supramolecular Chemistry	3	0	3
CHEM F329	Analytical Chemistry	3	1	4
CHEM F330	Photophysical Chemistry	3	1	4
CHEM F333	Chemistry of Materials	3	0	3
CHEM F334	Magnetic Resonance	3	0	3
CHEM F335	Organic Chemistry and Drug Design	3	0	3
CHEM F336	Nanochemistry	3	1	4
CHEM F337	Green Chemistry and Catalysis	3	0	3
CHEM F412	Photochemistry and Laser Spectroscopy	3	0	3
CHEM F413	Electron Correlation In Atoms And Molecules	3	1	4
CHEM F414	Bio and Chemical Sensors	3	0	3
CHEM F415	Frontiers in Organic Synthesis	3	0	3
CHEM F422	Statistical Thermodynamics	3	0	3
CHEM F430	Atmospheric Chemistry	3	0	3
CHEM F431	Sustainable Chemistry using Renewables	3	0	3
CHEM G521	Environmental Chemistry			5

ECONOMICS

CORE COURSES		L	P	U
ECON F211	Principles of Economics	3	0	3
ECON F212	Fundamentals of Finance and Accounts	3	0	3
ECON F213	Mathematical and Statistical Methods	3	0	3
ECON F214	Economic Environment of Business	3	0	3
ECON F241	Econometric Methods	3	0	3
ECON F242	Microeconomics	3	0	3
ECON F243	Macroeconomics	3	0	3
ECON F244	Economics of Growth and Development	3	0	3
ECON F311	International Economics	3	0	3
ECON F312	Money, Banking and Financial Markets	3	0	3
ECON F313	Issues in Economic Development	3	0	3
ECON F341	Public Finance Theory and Policy	3	0	3
ECON F342	Applied Econometrics	3	0	3
ECON F343	Economic Analysis of Public Policy	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F314	Game Theory and It's Applications	3	0	3
ECON F315	Financial Management	3	0	3
ECON F314	Industrial Economics	3	0	3
ECON F345	Behavioral Economics	3	0	3
ECON F351	Indian Economic Development	3	0	3
ECON F352	Management of Banks and Financial Institutions	3	0	3
ECON F353	Energy Economics and Policy	3	0	3
ECON F354	Derivatives and Risk Management	3	0	3
ECON F355	Business Analysis and Valuation	3	0	3
ECON F356	Strategic Financial Management	3	0	3
ECON F357	Management Control System	3	0	3
ECON F411	Project Appraisal	3	0	3
ECON F412	Security Analysis and Portfolio Management	3	0	3
ECON F413	Financial Engineering	3	0	3
ECON F414	Creating and Leading Entrepreneurial Organizations	3	0	3
ECON F415	New Venture Creation	3	0	3
ECON F417	Risk Management and Insurance	3	0	3
ECON F418	Quantitative Analysis of International Trade	3	0	3
ECON F422	Functions and Working of Stock Exchanges	3	0	3
ECON F434	International Business	3	0	3
ECON F435	Marketing Research	3	0	3
ECON F471	Resources and Environmental Economics	3	0	3
FIN F314	Investment Banking and Financial Services	3	0	3

DISCIPLINE ELECTIVE COURSES		L	P	U
FIN F414	Financial Risk Analytics and Management	3	0	3
MATH F212	Optimization	3	0	3
MATH F242	Operations Research	3	0	3

MATHEMATICS				
CORE COURSES		**L**	**P**	**U**
MATH F212	Optimization	3	0	3
MATH F213	Discrete Mathematics	3	0	3
MATH F214	Elementary Real Analysis	3	0	3
MATH F215	Algebra I	3	0	3
MATH F241	Mathematical Methods	3	0	3
MATH F242	Operations Research	3	0	3
MATH F243	Graphs and Networks	3	0	3
MATH F244	Measure & Integration	3	0	3
MATH F311	Introduction to Topology	3	0	3
MATH F312	Ordinary Differential Equations	3	0	3
MATH F313	Numerical Analysis	3	0	3
MATH F341	Introduction to Functional Analysis	3	0	3
MATH F342	Differential Geometry	3	0	3
MATH F343	Partial Differential Equations	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F314	Game Theory and Its Applications	3	0	3
BITS F343	Fuzzy Logic and Applications	3	0	3
BITS F463	Cryptography	3	0	3
CS F211	Data Structures and Algorithms	3	1	4
CS F364	Design and Analysis of Algorithms	3	0	3
MATH F231	Number Theory	3	0	3
MATH F314	Algebra II	3	0	3
MATH F353	Statistical Inference and Applications	3	0	3
MATH F354	Complex Analysis	3	0	3
MATH F378	Advanced Probability Theory	3	0	3
MATH F420	Mathematical Modeling	3	0	4
MATH F421	Combinatorial Mathematics	3	0	3
MATH F422	Numerical Methodology for Partial Differential Equations	3	1	4
MATH F423	Introduction to Algebraic Topology	3	0	3
MATH F424	Applied Stochastic Process	3	1	4
MATH F431	Distribution Theory	3	0	3
MATH F432	Applied Statistical Methods	3	0	3
MATH F441	Discrete Mathematical Structures	3	0	3
MATH F444	Numerical Solutions of Ordinary Differential Equations	3	0	3
MATH F445	Mathematical Fluid Dynamics	3	0	3
MATH F456	Cosmology	3	0	3
MATH F471	Nonlinear Optimization	3	0	3
MATH F481	Commutative Algebra	3	0	3
MATH F492	Wavelet analysis and applications	3	1	4

PHYSICS				
CORE COURSES		**L**	**P**	**U**
PHY F211	Classical Mechanics	3	1	4
PHY F212	Electromagnetic Theory I	3	0	3
PHY F213	Optics	3	0	3
PHY F214	Electricity, Magnetism & Optics Laboratory	0	2	2
PHY F241	Electromagnetic Theory II	3	1	4
PHY F242	Quantum Mechanics I	3	0	3
PHY F243	Mathematical Methods of Physics	3	0	3
PHY F244	Modern Physics Laboratory	0	2	2
PHY F311	Quantum Mechanics II	3	0	3
PHY F312	Statistical Mechanics	3	0	3
PHY F313	Computational Physics	3	0	3
PHY F341	Solid State Physics	3	0	3
PHY F342	Atomic & Molecular Physics	3	0	3
PHY F343	Nuclear & Particle Physics	3	0	3
PHY F344	Advanced Physics Laboratory	0	3	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BIO F215	Biophysics	3	0	3
BITS F316	Nonlinear Dynamics and Chaos	3	0	3
BITS F317	Theoretical Neuroscience	3	0	3
PHY F346	Laser Science and Technology	3	0	3
BITS F386	Quantum Information and Computation	3	0	3
BITS F416	Introduction to Nanoscience	3	0	3
BITS F417	Microfluidics & its Applications			4
BITS F446	Pattern Recognition			3
EEE F426	Fibre Optics & Optoelectronics	3	0	3
MATH F424	Applied Stochastic Processess	3	1	4
MATH F456	Cosmology	3	0	3
PHY F215	Introduction to Astronomy & Astrophysics	3	0	3
PHY F315	Theory of Relativity	3	0	3
PHY F316	Musical Acoustics	3	0	3
PHY F317	Introduction to Radio Astronomy	3	0	3
PHY F378	Plasma Physics and its Applications	3	0	3
PHY F379	Thin Film Technology	3	0	3
PHY F412	Introduction To Quantum Field Theory	3	1	4
PHY F413	Particle Physics	3	1	4
PHY F414	Physics of Advanced Materials	3	1	4
PHY F415	General Theory of Relativity and Cosmology	3	1	4
PHY F416	Soft Condensed Matter Physics	3	1	4

PHY F417	Experimental Methods of Physics	3	1	4
PHY F418	Lasers and Applications	3	1	4
PHY F419	Advanced Solid State Physics	3	1	4
PHY F420	Quantum Optics	3	1	4
PHY F421	Advanced Quantum Mechanics	3	1	4
PHY F422	Group Theory and Applications	3	1	4
PHY F423	Special Topics in Statistical Mechanics	3	1	4
PHY F424	Advanced Electrodynamics	3	1	4
PHY F425	Advanced Mathematical Methods of Physics	3	1	4
PHY F426	Physics of Semiconductor Devices	3	1	4
PHY F427	Atmospheric Physics	3	0	3
PHY F428	Quantum Information Theory	3	0	3
PHY F431	Geometrical Methods in Physics	3	0	3
PHY F432	Classical Theory of Fields: A Symmetry Perspective			4*
PHY G512	Advanced Quantum Field Theory	3	0	3

GENERAL STUDIES – COMMUNICATION AND MEDIA STUDIES STREAM

CORE COURSES		**L**	**P**	**U**
GS F221	Business Communication	3	0	3
GS F222	Language Lab Practice	0	3	3
GS F223	Introduction to Mass Communication	3	0	3
GS F224	Print and Audio Visual Advertising	2	1	3
GS F241	Creative Writing	2	1	3
GS F243	Current Affairs	3	0	3
GS F244	Reporting and Writing for Media	3	0	3
GS F245	Effective Public Speaking	2	1	3
GS F321	Mass Media Content and Design	2	1	3
GS F322	Critical Analysis of Literature and Cinema	3	0	3
GS F342	Computer Mediated Communication	3	0	3
GS F343	Short Film and Video Production	2	1	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F385	Introduction to Gender Studies	3	0	3
GS F211	Modern Political Concepts	3	0	3
GS F212	Environment, Development & Climate Change	3	0	3
GS F231	Dynamics of Social Change	3	0	3
GS F232	Introductory Psychology	3	0	3
GS F242	Cultural Studies	3	0	3
GS F311	Introduction to Conflict Management	3	0	3
GS F325	Journalism	3	0	3
GS F326	Creative Thinking	2	1	3
GS F327	Selected Reading	3	0	3
GS F333	Public Administration	3	0	3
GS F334	Global Business Technology & Knowledge Sharing	3	0	3
GS F344	Copywriting	2	0	2
HSS F227	Cross Cultural Skills	3	0	3
HSS F232	Introduction to Development Studies	3	0	3
HSS F315	Society, Business, and Politics	3	0	3
HSS F317	Introduction to Globalization	3	0	3
HSS F319	Lighting for Theatre and Films			2
HSS F323	Organizational Psychology	3	0	3
HSS F328	Human Resource Development	3	0	3
HSS F341	Performance Design	1	2	3
HSS F343	Professional Ethics	3	0	3
HSS F346	International Relations	3	0	3

GENERAL STUDIES – DEVELOPMENT STUDIES STREAM

CORE COURSES		**L**	**P**	**U**
ECON F211	Principles of Economics	3	0	3
GS F211	Modern Political Concepts	3	0	3
GS F212	Environment, Development & Climate Change	3	0	3
GS F213	Development Theories	3	0	3
GS F231	Dynamics of Social Change	3	0	3
GS F232	Introductory Psychology	3	0	3
GS F233	Public Policy	3	0	3
GS F234	Development Economics	3	0	3
GS F311	Introduction to Conflict Management	3	0	3
GS F312	Applied Philosophy	3	0	3
GS F331	Techniques in Social Research	3	0	3
GS F332	Contemporary India	3	0	3
GS F333	Public Administration	3	0	3
GS F334	Global Business Technology & Knowledge Sharing	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F214	Science, Technology and Modernity	3	0	3
BITS F385	Introduction to Gender Studies	3	0	3
BITS F399	Humanistic Theories of Science and Technology	3	0	3
GS F212	Environment, Development and Climate Change	3	0	3
GS F213	Development Theories	3	0	3
HSS F233	Main Trends in Indian History	3	0	3

DISCIPLINE ELECTIVE COURSES		L	P	U
HSS F234	Main Currents of Modern History	3	0	3
HSS F235	Introductory Philosophy	3	0	3
HSS F236	Symbolic Logic	3	0	3
HSS F312	Bureaucracy	3	0	3
HSS F315	Society, Business, and Politics	3	0	3
HSS F343	Professional Ethics	3	0	3
HSS F344	Heritage of India	3	0	3
HSS F345	Gandhian Thoughts	3	0	3
HSS F346	International Relations	3	0	3

Project Type Courses

In addition to discipline electives mentioned above, the following project type courses are also being offered by the departments for each of their respective programmes. These courses may be taken by the students to meet the discipline elective requirements.

XXX F266	Study Project	3
XXX F366	Laboratory Project	3
XXX F367	Laboratory Project	3
XXX F376	Design Project	3
XXX F377	Design Project	3
XXX F491	Special Project	3

where XXX indicates the Degree programme. For example, CHE F266 Study Project is intended for a student of B.E. Chemical Engineering.

A student may avail a maximum of 3 Project courses to meet the Discipline Electives Requirement under the head of (Discipline) Electives with the following limitations:

(a) All of these Project courses should be

  (i) within the Discipline (for which the degree is being awarded) or

  (ii) from an allied Discipline if so specified by the Department offering the degree

(b) The projects may be chosen from under these sub-heads.

  (i) Study Projects (maximum of 1)

  (ii) Laboratory (maximum of 2)

  (iii) Design Projects (maximum of 2)

  (iv) Special Projects (maximum of 1)

A student may avail a maximum of 3 Project courses (under any of the heads mentioned above offered by any discipline as an Open Elective. However, in total a student may avail at most 5 Project courses against Electives slots in any category.

Pool of Humanities courses for first degree programmes:

The following is the list of courses from which Humanities Electives can be taken by the students in different first degree programs to meet the general institutional requirement of eight units under the Humanities elective category:

Course No.	Course Title	L	P	U
BITS F214	Science, Technology and Modernity	3	0	3
BITS F226	Soft Skills for Professionals	3	0	3
BITS F385	Introduction to Gender Studies	3	0	3
BITS F399	Humanistic Theories of Science and Technology	3	0	3
BITS F419	Management of Cross Cultural Engineering Teams	3	0	3
GS F211	Modern Political Concepts	3	0	3
GS F212	Environment, Development & Climate Change	3	0	3
GS F213	Development Theories	3	0	3
GS F221	Business Communication	3	0	3
GS F223	Introduction to Mass Communication	3	0	3
GS F224	Print and Audio-Visual Advertisement	2	1	3
GS F231	Dynamics of Social Change	3	0	3
GS F232	Introductory Psychology	3	0	3
GS F233	Public Policy	3	0	3
GS F234	Development Economics	3	0	3
GS F241	Creative Writing			3*
GS F242	Cultural Studies	3	0	3
GS F243	Current Affairs	3	0	3
GS F244	Reporting and Writing for Media	2	1	3
GS F245	Effective Public Speaking	2	1	3
GS F311	Introduction to Conflict Management	3	0	3
GS F312	Applied Philosophy	3	0	3

Course No.	Course Title	L	P	U
GS F313	Marxian Thoughts	3	0	3
GS F321	Mass Media Content and Design	2	1	3
GS F322	Critical Analysis of Literature and Cinema	3	0	3
GS F325	Journalism	3	0	3
GS F326	Creative Thinking	2	1	3
GS F327	Selected Reading	3	0	3
GS F331	Techniques in Social Research	3	0	3
GS F332	Contemporary India	3	0	3
GS F333	Public Administration	3	0	3
GS F343	Short Film and Video Production	2	1	3
GS F344	Copywriting	2	0	2
HSS F221	Readings from Drama	3	0	3
HSS F222	Linguistics	3	0	3
HSS F223	Appreciation of Indian Music	3	0	3
HSS F224	English Skills for Academic	3	0	3
HSS F226	Postmodernism	3	0	3
HSS F227	Cross Cultural Skills	3	0	3
HSS F228	Phonetics & Spoken English	3	0	3
HSS F229	Introduction to Western Music	3	0	3
HSS F232	Introduction to Development Studies	3	0	3
HSS F233	Main Trends in Indian History	3	0	3
HSS F234	Main Currents of Modern History	3	0	3
HSS F235	Introductory Philosophy	3	0	3
HSS F236	Symbolic Logic	3	0	3
HSS F237	Contemporary Indian English Fiction	3	0	3
HSS F238	Sports and Society	3	0	3
HSS F244	Crime and New Media	3	0	3
HSS F245	Gender, Science and Technology	3	0	3
HSS F246	Philosophy of Nāgārjuna	3	0	3
HSS F247	Social Informatics	3	0	3
HSS F248	Introduction to Disability Studies	3	0	3
HSS F249	Politics in India	3	0	3
HSS F266	Study Project			3
HSS F311	Introduction to Videogame Studies	3	0	3

Course No.	Course Title	L	P	U
HSS F313	Introduction to Contemporary Arts	3	0	3
HSS F315	Society, Business, and Politics	3	0	3
HSS F316	Popular Literature and Culture of South Asia	3	0	3
HSS F317	Introduction to Globalization	3	0	3
HSS F318	Introduction to Anthropology	3	0	3
HSS F319	Lighting for Theatre and Films			2*
HSS F323	Organizational Psychology	3	0	3
HSS F325	Cinematic Adaptation	3	0	3
HSS F326	Humanities and Design	2	1	3
HSS F327	Contemporary Drama	3	0	3
HSS F328	Human Resource Development	3	0	3
HSS F329	Musicology – An – Introduction	3	0	3
HSS F330	Appreciation of Art	3	0	3
HSS F331	Sankara's Thoughts	3	0	3
HSS F332	Cinematic Art			3*
HSS F333	Comparative Religion	3	0	3
HSS F334	Srimad Bhagavad Gita	3	0	3
HSS F335	Literary Criticism	3	0	3
HSS F336	Modern Fiction	3	0	3
HSS F337	English Literary Forms and Movements	3	0	3
HSS F338	Comparative Indian Literature	3	0	3
HSS F339	Theatre Art Acting and Production	3	0	3
HSS F340	Post Colonial Literatures	3	0	3
HSS F341	Performance Design	1	2	3
HSS F342	Advanced Communicative English	3	0	3
HSS F343	Professional Ethics	3	0	3
HSS F344	Heritage of India	3	0	3
HSS F345	Gandhian Thoughts	3	0	3
HSS F346	International Relations	3	0	3
HSS F347	Introduction to Carnatic Music	3	0	3
HSS F348	Introduction to Hindustani Music	3	0	3
HSS F349	Ecocriticism	3	0	3
HSS F350	Human Rights: History, Theory & Practice	3	0	3

Course No.	Course Title	L	P	U
HSS F351	Social and Political Ecology	3	0	3
HSS F352	Technology, Work and Society	3	0	3
HSS F353	Philosophy of Aesthetics	3	0	3
HSS F354	Introduction to Islamic Economy	3	0	3
HSS F355	Dictatorship, Democracy & Development	3	0	3
HSS F356	Social Movements and Protest Politics	3	0	3
HSS F364	Political Economy of Gulf Cooperation Council States	3	0	3
HSS F365	Science of Sustainable Happiness	3	0	3
HSS F368	Asian Cinemas and Cultures	3	0	3
HSS F369	Caste and Gender in India	3	0	3
HSS F371	Cities-Life, Issues and Conflicts	3	0	3
HSS F372	Introduction to Social Psychology	3	0	3
HSS F373	Shakespeare and Popular Culture	3	0	3
HSS F374	Urban Modernity and the Renewal of Paris	3	0	3
HSS F399	Introduction to American Literature	3	0	3
SANS F111	Sanskrit	3	0	3

It may be noted that a student cannot count a course (or its equivalent) of his/her own discipline (s) as a humanities elective even if it is listed in this pool of humanities electives.

Other Courses

BIO F231	Biology Project Laboratory	3
BITS C483	Indian Wisdom for Modern Management	3 0 3
BITS F211	Introduction to IPR	1
BITS F212	Introduction to Human Rights	1
BITS F213	Introduction to Environmental studies	1
BITS F215	Applications of Bio-Medical Instrumentation Techniques in Healthcare	2 0 2
BITS F217	Environment, Development and Climate Change	3 0 3
*BITS F225	Environmental Studies	3 0 3
BITS F311	Image Processing	3 0 3
BITS F319	Negotiation Skills and Techniques	2 0 2
BITS F320	Managerial Skills	2*
BITS F321	Legal and Economic Environment of Business	4*
BITS F333	Project on Organisational Aspects	3
BITS F334	Project on Organisational Aspects	3
BITS F372	Data Communications and Networks	3 0 3
BITS F381	TIC Projects	3
BITS F382	Reading Course	3
BITS F383	TIC Projects	3
BITS F398	Creative Multimedia	2 2 3
BITS F414	Introduction to Bioinformatics	3 0 3
BITS F416	Introduction to Nanoscience	3 0 3
BITS F417	Micro Fluidics and its Application	4*
BITS F428	Essentials of Strategic Management	3 0 3
BITS F431	Flexible Manufacturing Systems	3 2 3
BITS F441	Robotics	3
BITS F442	Remote Sensing and Image Processing	3
BITS F444	Artificial Intelligence	3
BITS F445	Neural Networks and Applications	3 0 3
BITS F446	Pattern Recognition	3
BITS F447	Multimedia Computing	3 0 3
BITS F448	Retail Management Systems	3 0 3
BITS F449	Financial Engineering	3 0 3
BITS F461	Software Engineering	3
BITS F462	Renewable Energy	3 0 3
BITS F468	New Venture Creation	3 0 3
BITS F469	Financing Infrastructure Projects	3 0 3
BITS F488	Services Management Systems	3 0 3
BITS F490	Project Management	4
BITS F493	Business Analysis and Valuation	3 0 3
BITS F494	Environmental Impact Assessment	3 1 4
BITS G516	Introduction to Business Sustainability	3 0 3
BITS G517	Cross Cultural Management	3 0 3
MGTS F351	Organisational Behaviour	3 0 3
MGTS F433	Advertising and Sales Promotion	3 0 3
PHY F221	Modern Physics	3 0 3
PHY F345	Quantum Mechanics for Engineers	3 0 3

***[Students completing this course will be awarded a non-letter grade (GOOD or POOR)]**

List of Audit Type Courses

BITS N101T	PHY FITNESS HEALTH & WEL	1*
CHI N101T	BEGINNING CHINESE	3 0 3
FRE N101T	BEGINNING FRENCH	3*
FRE N102T	TECHNICAL FRENCH	3 0 3
GER N101T	BEGINNING GERMAN	3 0 3
GER N102T	TECHNICAL GERMAN	3 0 3
HSS N201T	INTRO TO PHOTOGRAPHY	3 0 3
HSS N202T	IND C DANCE BHARATNATYAM	3 0 3
HSS N203T	Basic Arabic	3 0 3
HSS N301T	ELEMENTS OF DANCE	1 1 2
JAP N101T	BEGINNING JAPANESE	3 0 3
MUSIC N103T	INDIAN CLASS MUSIC VOC I	3*
MUSIC N104T	INDIA CLASS MUSIC VOC II	3*
MUSIC N105T	WESTERN CLASS MUSIC I	3*
MUSIC N106T	WESTERN CLASS MUSIC II	3*
MUSIC N111T	HIND CLASS MUSIC (INST)I	3*
MUSIC N112T	HIND CLASS MUSIC(INST)II	3*
MUSIC N113T	INDIA CLASS MUSIC(INST)I	3*
MUSIC N114T	INDIA CLASS MUSIC(INST)II	3*
MUSIC N203T	INDIA CLASS MUSIC(VOC) III	3*
MUSIC N204T	IND CLASS MUSIC(VOC) IV	3*
MUSIC N205T	WESTERN CLASS MUSIC III	3*
MUSIC N206T	WESTERN CLASS MUSIC IV	3*
MUSIC N213T	IND CLASS MUSIC (INST) III	3*
MUSIC N214T	IND CLASS MUSIC(INST)IV	3*
MUSIC N303T	ADV IND MUSIC PRA(VOCAL)	-
MUSIC N313T	ADV IND MUSIC PRA (INST)	-
RUS N101T	BEGINNING RUSSIAN	3 0 3
RUS N102T	TECHNICAL RUSSIAN	3 0 3

MINOR PROGRAMMES FOR FIRST DEGREE STUDENTS

"Minor programs" are offered as options for first degree students with the intent of encouraging them to add focus to their supplemental learning (outside a major area) as well as recognizing and certifying the knowledge obtained in an area that is outside of their major area.

General Guidelines

- A minor would allow a Department (or multiple Departments) to offer a package of courses in an area/sub-area to students for whom this area/sub-area would not be part of their (major) program.
- A minor option would allow a student to pursue the study of an area or a sub-area through a set of courses but not as exhaustively as required to obtain a degree (i.e. a major) in that area.
- A minor may be inter-disciplinary (e.g. a minor in Computational Science may include courses in Numerical Analysis, Computational Physics, Computational Chemistry, and Bioinformatics among others).
- A minor will be recognized by means of a separate certificate.

Requirements for a minor

- Courses and Units Requirement:

  Each minor would be defined by coursework requirement with the following conditions:

Category	Courses	Units
Minor – Core	4 (max)	12 (max)
Minor – Electives	2 (min)	6 (min)
Minor – Total	5 (min)	15 (min)

- Elective Pool:
  - The pool of electives specific to a minor may include courses from one or more disciplines and may include project / seminar type courses.
  - A student may use at most one project / seminar type course to meet the requirements of a minor.
- Overlap in requirements:
  - At most 2 courses (and at most 6 units) out of the above requirement (of 5 courses and 15 units) may be met by mandatory courses of the student's degree i.e. major (or degrees i.e. majors) :

    i.e. from the general institutional requirement (excluding Humanities

requirement) or the (Major) discipline Core(s).

- No course may be used to meet the requirements of two different minors nor may a course be used to the meet the requirements of two majors and a minor.

- GPA requirement:

- A student – on completion of the requirements for a minor – must have maintained a cumulative GPA of 4.5 or above (out of 10) in the courses applied to the minor.

Process for declaring / obtaining a minor

- A student – if he/she chooses to pursue a minor – must declare at the end of the 2nd year that he/she will pursue a specific minor. The student will charged a small fee for logistics.

- If and when he/she completes the requirements for the minor – as stipulated above and as stipulated for the specific minor, then he/she may apply for a "minor" certificate.

- If it is verified that the requirements are met then he/she will be awarded a "minor certificate" (separate from a degree – i.e. major – certificate).

- A minor certificate will be issued only on completion of a degree (i.e. a major).

At present twelve minor programs viz. Minor in Aeronautics, Data Science, English Studies, Entrepreneurship, Film and Media, Finance, Materials Science and Engineering, Philosophy, Economics and Politics (PEP), Physics, Public Policy, Robotics and Automation and Water and Sanitation have been designed. The details of which are given below:

Minor in Aeronautics					
Description	Aeronautics is an exhilarating field encompassing the fundamentals of aerodynamics (interaction of air with objects in motion), propulsion (power systems responsible for the generation of thrust for providing motion), structures (design of airframes and material characteristics), and flight mechanics (trajectory study and optimization), as applied to air-borne vehicles within the Earth's atmosphere, and to rockets and spacecrafts outside.				
Courses & Units Req.	06 courses (min) 18 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	AN F311	Principles of Aerodynamics	3	0	3
	AN F312	Aircraft Propulsion	3	0	3
	AN F313	Flight Mechanics and Controls	3	0	3
Electives	AN F314	Introduction to Flight	3	0	3
	AN F315	Aircraft Structures	3	0	3
	ME F415	Gas Dynamics	3	0	3
	ME F418	Rocket and Spacecraft Propulsion	3	0	3
	ME F452	Composite Materials and Design	3	0	3
	ME F482	Combustion	3	0	3
	ME F485	Numerical Techniques for Fluid Flow & Heat Transfer	3	0	3
	EEE F242	Control Systems	3	0	3
	EEE F417	Computer Based Control Systems	3	0	3

Minor in Data Science					
Description	The minor in Data Science aims to enable students to learn the basic skills required by Data Scientist for today's world. Data Science is becoming ubiquitous to all kinds of industry and opening up new avenues of business. This minor will help students to apply knowledge from Mathematics, Statistics and Computing for analyzing data collected from different kinds of sources in their respective engineering applications and make meaningful and actionable insights.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	BITS F464	Machine Learning	3	0	3
	CS F320	Foundations of Data Science	3	0	3
	MATH F432	Applied statistical Methods	3	0	3
Electives	BITS F453	Computational Learning Theory	3	0	3
	BITS F454	Bio-Inspired Intelligence: Algorithms and Applications	3	0	3
	CS F317	Reinforcement Learning	3	0	3
	CS F407	Artificial Intelligence	3	0	3
	CS F415	Data Mining	3	0	3
	CS F425	Deep Learning	3	0	3
	CS F426	Graph Mining	3	1	4
	CS F429	Natural Language Processing	3	0	3
	CS F469	Information Retrieval	3	0	3
	CS G519	Social Media Analytics	3	1	4
	MATH F212	Optimization	3	0	3
	MATH F353	Statistical Inference and applications	3	0	3
	MATH F424	Applied Stochastic Processes	3	1	4
	MATH F471	Nonlinear Optimization	3	0	3

Minor in English Studies					
Description	English has a rich linguistic, literary and cultural heritage. The classic literary masterpieces of English are still widely read and appreciated. English has also evolved over centuries and is now considered as the pre-eminent means of communication in the various sectors such as business, diplomacy, mass media, education, etc., across the globe. The Minor in English Studies introduces students to the language and literary canons, and renders them with adequate exposure not only to the cultural and linguistic aspects but also to practical applications of English language and literature. In particular, the core and elective courses included in the Minor would encourage students to acquire a critical understanding of literary and linguistic analyses, and the capacity to engage meaningfully in analysis, interpretation, and explanation. The Minor also gives an opportunity for students to choose modules and develop their own interests in language or literature. Students who follow the Minor will have an enhanced understanding of the nature of the English language and literature and also of the tools needed for further independent exploration of literary and linguistic phenomena.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	GS F241	Creative Writing	2	1	3
	HSS F337	English Literary Forms and Movements	3	0	3
Electives Pool – I (Language)	GS F221	Business Communication	3	0	3
	GS F244	Reporting and Writing for Media	3	0	3
	GS F245	Effective Public Speaking	3	0	3
	HSS F222	Linguistics	3	0	3
	HSS F227	Cross Cultural Skills	3	0	3
	HSS F228	Phonetics and Spoken English	3	0	3
	HSS F342	Advanced Communicative English	3	0	3
Elective Pool-II (Literature)	GS F242	Cultural Studies	3	0	3
	GS F322	Critical Analysis of Literature and Cinema	3	0	3
	HSS F221	Readings from Drama	3	0	3
	HSS F226	Postmodernism	3	0	3
	HSS F237	Contemporary Indian English Fiction	3	0	3
	HSS F316	Popular Literature and Culture of South Asia	3	0	3
	HSS F327	Contemporary Drama	3	0	3
	HSS F330	Appreciation of Art	3	0	3
	HSS F332	Cinematic Arts	3	0	3
	HSS F335	Literary Criticism	3	0	3
	HSS F336	Modern Fiction	3	0	3
	HSS F338	Comparative Indian Literature	3	0	3
	HSS F340	Postcolonial Literatures	3	0	3
	HSS F349	Ecocriticism	3	0	3
	HSS F373	Shakespeare and Popular Culture	3	0	3
	HSS F399	Introduction to American Literature	3	0	3

Minor in Entrepreneurship					
Description	Entrepreneurship has tremendous impact on development of economy as well as society addressing various market & societal problems through continuous value creation in terms of innovations and job creation. The minor in entrepreneurship aims to equip students from different disciplines with better understanding of entrepreneurial process, necessary skills and experience to translate ideas into real innovative products/services to new entrepreneurial ventures. In this programme, hands-on experiential learning is emphasized giving students an opportunity to learn in a team environment, design innovative products/services and create their own businesses. This will motivate students to pursue entrepreneurship as their career choice.				
Courses & Units Required	**5 courses (min)** **15 units (min)**				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	BITS F468	New Venture Creation	3	0	3
	BITS F482 or ECON F414	Creating and Leading Entrepreneurial Organizations	3	0	3
	ECON F212	Fundamentals of Finance and Accounting	3	0	3
Electives (minimum of 2 courses and additional units required to make the total to 15)	BITS F322	Venture Team Development and Organization	3	0	3
	BITS F323	Venture Finance	3	0	3
	BITS F324	Strategy for Entrepreneurs	3	0	3
	BITS F325	New Product and Service Design	3	0	3
	BITS F326	Design Thinking for Innovation & Entrepreneurship	3	0	3
	BITS F427	Digital Marketing	3	0	3

Minor in Film and Media					
Description	Film and its derivative forms of media such as television and advertising are dominant cultural forces in the contemporary world. The minor in Film and Media aims to provide: i. An introduction to media studies with a specific focus on film studies ii. A basic introduction to Print and Digital Media including film making and film appreciation iii. Hands-on training in writing for media and film production				
Courses & Units Required	6 courses (min) 18 units (min)				
Core Courses	**Course number**	**Course Title**	**L**	**P**	**U**
	GS F223	Introduction to Mass Communication	3	0	3
	GS F244	Reporting and Writing for Media	3	0	3
	GS F322	Critical Analysis of Literature and Cinema	3	0	3
Elective Courses	GS F224	Print and Audio Visual Advertising	3	0	3
	GS F242	Cultural Studies	3	0	3
	GS F321	Mass Media Content and Design	3	0	3
	GS F343	Short Film and Video Production	3	0	3
	HSS F332	Cinematic Arts	3	0	3

Minor in Finance					
Description	The minor in Finance aims at providing the student a grounding in the basic concepts of accounting and finance so as to complement their existing disciplinary knowledge, enrich their educational experience, enable them to make better financial decisions, and expand their career opportunities. It will also give students an opportunity to learn more about investments and quantitative applications in finance.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	ECON F212	Fundamentals of Finance and Accounting	3	0	3
	FIN F315	Financial Management	3	0	3
Elective Courses	ECON F241	Econometric methods	3	0	3
	ECON F312	Money banking and Financial markets	3	0	3
	ECON F355	Business Analysis & Valuation	3	0	3
	ECON F411	Project Appraisal	3	0	3
	ECON F413	Financial Engineering	3	0	3
	FIN F242	Introduction to Financial Mathematics	3	0	3
	FIN F243	Functions & Working of Stock Exchanges	3	0	3
	FIN F311	Derivatives & Risk Management	3	0	3
	FIN F312	Fundamentals of Taxation and Audit	3	0	3
	FIN F313	Security Analysis & Portfolio Management	3	0	3
	FIN F314	Investment Banking & Financial Services	3	0	3
	FIN F414	Financial Risk Analytics and Management	3	0	3

Minor in Materials Science and Engineering					
Description	Materials Science and Engineering is an interdisciplinary subject that makes use of knowledge from Physics, Chemistry, Engineering, Mathematics, Biology and Biotechnology, but which has its own special character. It is always evolving – new and exciting materials such as nanomaterials, high-temperature and lightweight materials, green materials and sustainable biomaterials for tissue engineering are continually emerging. The field of Material Science combines a wide knowledge base and puts it to diverse practical and commercial use.				
Courses & Units Required	5 courses (min) 15 units (min)				
	Course Number	**Course Title**	**L**	**P**	**U**
Core Courses	CHE F243 / ME F213	Materials Science and Engineering	3 2	0 0	3 2
	MST F331	Materials Characterization	3	1	4
	MST F332	Materials Processing	3	0	3
Elective Courses	BITS F416	Introduction to Nanoscience	3	0	3
	CHE F433	Corrosion Engineering	3	0	3
	CHEM F223	Colloid and Surface Chemistry	3	0	3
	CHEM F326	Solid State Chemistry	3	0	3
	CHEM F336	Nanochemistry	3	1	4
	ME F452	Composite Materials and Design	3	0	3
	MST F333	Introduction to Biomaterials	3	0	3
	MST F334	Materials for Catalytic Applications	3	0	3
	MST F335	Coating and thin film technology	3	0	3
	MST F336	Glass Technology	3	0	3
	MST F337	Materials for Energy Applications	3	0	3
	MST F338	Metals and Alloys	3	0	3
	MST F339	Polymer Materials	3	0	3
	PHY F379	Thin Film Technology	3	0	3
	PHY F414	Physics of Advanced Materials	3	1	4
	PHY F416	Soft condensed Matter Physics	3	1	4

Minor in Philosophy, Economics, and Politics					
Description	The minor in *Philosophy, Economics & Politics & (PEP)* aims at introducing students to a wide range of approaches to understand the social and human world we live in and to develop skills useful for a range of career opportunities in national and international organizations. It would particularly interest and enthuse those students who wish to complement their core expertise in science and engineering with a good grasp of the humanities and social sciences. As a multi-disciplinary minor, this option will provide a judicious mix of knowledge in social sciences (economics, sociology and politics) and the humanities (philosophy) that would enable students to draw connections among political, economic, and social phenomena as well as equip them with the necessary skills to think through complex challenges of our society in a creative and critical manner.				
Courses & Units Required	6 courses (min) 18 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	ECON F211	Principles of Economics	3	0	3
	GS F211	Modern Political Concepts	3	0	3
	HSS F235	Introductory Philosophy	3	0	3
Elective Courses	BITS F 385	Introduction to Gender Studies	3	0	3
	GS F231	Dynamics of Social Change	3	0	3
	GS F234	Development Economics	3	0	3
	GS F243	Current Affairs	3	0	3
	GS F312	Applied Philosophy	3	0	3
	GS F313	Marxian Thoughts	3	0	3
	GS F332	Contemporary India	3	0	3
	GS F333	Public Administration	3	0	3
	HSS F236	Symbolic Logic	3	0	3
	HSS F315	Society, Business, and Politics	3	0	3
	HSS F322	Social and Political Ecology	3	0	3
	HSS F331	Sankara's Thoughts	3	0	3
	HSS F333	Comparative Religion	3	0	3
	HSS F343	Professional Ethics	3	0	3
	HSS F345	Gandhian Thoughts	3	0	3
	HSS F346	International Relations	3	0	3
	HSS F350	Human Rights: History, Theory and Practice	3	0	3
	HSS F353	Philosophy of Aesthetics	3	0	3
	HSS F354	Introduction to Islamic Economy	3	0	3
	HSS F355	Dictatorship, Democracy & Development	3	0	3
	HSS F356	Social Movements and Protest Politics	3	0	3

Minor in Physics					
Description	The theories in physics are all-pervading and their applications are found in varied branches of engineering and sciences. The minor in Physics aims to introduce the student to fundamental theories in physics. The core courses cover the basics and by choosing from the large pool of electives, the student will be able to pursue to a deeper level the areas of her/his interest. This minor would equip the students with the skill and knowledge which will help them in gaining insights in their own primary area of study.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	PHY F212 **or** ECE F212/ EEE F212/ INSTR F212	Electromagnetic Theory – 1 **or** Electromagnetic Theory	3	0	3
	PHY F242	Quantum Mechanics – 1	3	0	3
	PHY F312	Statistical Mechanics	3	0	3
Elective Courses	BITS F316	Nonlinear Dynamics and Chaos	3	0	3
	BITS F386	Quantum Information and Computing	3	0	3
	PHY F211	Classical Mechanics	3	1	4
	PHY F213	Optics	3	0	3
	PHY F214	Electricity Magnetism and Optics Lab	0	2	2
	PHY F215	Introduction to Astronomy and Astrophysics	3	0	3
	PHY F241	Electromagnetic Theory – 2	3	1	4
	PHY F243	Mathematical Method of Physics	3	0	3
	PHY F244	Modern Physics Lab	0	2	2
	PHY F311	Quantum Mechanics – 2	3	0	3
	PHY F313	Computational Physics	3	0	3
	PHY F315	Theory of Relativity	3	0	3
	PHY F341	Solid State Physics	3	0	3
	PHY F342	Atomic and Molecular Physics	3	0	3
	PHY F343	Nuclear and Particle Physics	3	0	3
	PHY F418	Lasers and Applications	3	1	4
	PHY F426	Physics of Semiconductors Devices	3	1	4
	PHY F427	Atmospheric Physics	3	0	3

Minor in Public Policy					
Description	The Minor in Public Policy aims at providing the students a clear and contextualised understanding of conceptual and empirical aspects of public policy, the nature of public policy interventions in India and their varying impacts. Also, it intends to provide the students an understanding of the dynamics of policymaking, central aspects of governance and core features and functions of institutions, and equip them with skills of policy analysis.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	GS F233	Public Policy	3	0	3
	GS F333	Public Administration	3	0	3
Elective Courses	HSS F232	Introduction to Development Studies	3	0	3
	HSS F317	Introduction to Globalisation	3	0	3
	HSS F322	Social and Political Ecology	3	0	3
	HSS F361	Urban Policy and Governance	3	0	3
	HSS F362	Local Governance and Participation	3	0	3

Minor in Robotics and Automation					
Description	This minor aims to impart specialized knowledge and skills in robotics and automation required by engineers to the current demands of various industrial sectors. Automobile, aerospace & defense, logistics engineering and factory automation companies are currently asking for engineering graduates with add-on skills in these areas. Feedback has established that several sectors of industry need the newly recruited employees with knowledge and skills in 'automation', 'robotics', and 'mechatronics'. Currently, the need of core courses of any B.E. programme of the Institute limits sufficient coverage of these topics in the existing core and hence the only way students can complement their learning with these specialized courses is through a minor programme. This minor programme has been designed by keeping that need in focus. This minor programme consists of a fairly generic core so as to be relevant to students of any discipline and a broad set of elective courses covering application of the fundamentals of robotics and automation to various industry sectors.				
Courses & Units Required	05 courses (min) 15 units (min)				
	Course Number	**Course Title**	**L**	**P**	**U**
Core Courses	BITS F441	Robotics	3	0	3
	EEE/INSTR/ECE F242	Control Systems	3	0	3
	BITS F327	Artificial Intelligence for Robotics	2	1	3
Electives	BITS F312	Neural Network & Fuzzy Logic	3	0	3
	BITS F415	Introduction To MEMS	3	1	4
	BITS F442	Remote Sensing and Image Processing	3	0	3
	BITS F464	Machine Learning	3	0	3
	ECE F434	Digital Signal Processing	3	1	4
	EEE F411	Internet of Things (IoT)	3	1	4
	EEE F422	Modern Control Systems	3	0	3
	EEE G512	Embedded System Design	3	1	4
	INSTR F343	Industrial Instrumentation and Control	3	0	3
	INSTR G611	Advanced Control Systems	3	2	5
	ME F244	Kinematics & Dynamics of Machinery	3	0	3
	ME F432	Computer Aided Manufacturing	2	1	3
	MF F311	Mechatronics & Automation	2	1	3
	MSE G511	Mechatronics	3	2	5

Name	Water and Sanitation				
Description	Sustainable Development Goal 6 (SDG 6) focusses on Water and Sanitation and the tasks mentioned in SDG 6. Sanitation is also high on agenda of the Indian Government as evident from Swachh Bharat Mission. Trained Postgraduate and working professionals are of high demand. Bill and Melinda Gates foundation had significantly invested in Water, Sanitation and Hygiene programme and they had funded UNESCO IHE and its 8 partners in developing e learning alliance. The foundation's investment strategy in sanitation requires qualified and trained professionals. This minor would equip the students with the skill and knowledge which will help them in gaining insights in the area of water and sanitation.				
Courses & Units Required	05 courses (min) 15 units (min)				
Core Courses	**CourseNumber**	**Course Title**	L	P	U
	BIO F216	Water Sanitation and Solid Waste Management	3	0	3
	BIO F217	Laboratory for Water Sanitation and Solid Waste management	1	2	3
Electives	BIO F266	Study Project			3
	SAN G511	Sanitation Technology	3	2	5
	SAN G512	Sanitation and Public Health	3	2	5
	SAN G513	Sanitation Governance Behaviour change and Advocacy			5*
	SAN G514	Sanitation Finance and Project Management			5*
	SAN G515	Emergency Sanitation & Leadership			5*

HIGHER DEGREE PROGRAMMES

A. Requirements

(i) M. E. and M. Pharm:

The following structure and requirements are:

1. (a) at least 12 courses and at least 48 credit units attributed to coursework; and

   (b) In addition, a Practice School (of at least 5½ months duration and 20 units) or a Dissertation (of at least 1 semester duration and 16 credit units)

2. A 4 unit course on Research Practice is mandatory for all students

   - BITS G540 Research Practice

3. Each Department may stipulate - for ea–h program a set of 4 to 5 courses (of at least 16 units and at most 20 units) per semester.

   (a) This adds up to at least 12 courses and at least 48 units of coursework but with a maximum of 15 courses and at most 60 units of coursework stipulated by the Department.

   (b) The nominal chart for a program would be as follows:

Year	I Semester	II Semester
I year	4 to 5 courses (16 to 20 units)	4 to 5 courses (16 to 20 units)
II year	4 to 5 courses (16 to 20 units)	PS / Dissertation

4. Each Department may identify one-third (1/3) to one-half (1/2) of the coursework requirement for each program as the Core Requirement.

   (a) The Core Requirement is mandatory for all students in the program.

   (b) The Core Requirement will be common across all campuses of BITS offering the same program.

5. Rest of the coursework requirement – other than the Core Requirement and the Research Practice course – may be met by electives of each student's choice.

   (a) The student must choose such electives from a Pool of Electives listed for the specific program.

   (b) The Pool of Electives may vary from campus to campus.

6. Each course in the Core Requirement or in the List of Electives must be a graduate level (5th or 6th level) course or an advanced under-graduate course (4th level) with the restriction that a student may use at the most two 4th level courses to meet the requirements in above.

7. Each Department in each campus may decide the scheduling of Core / Elective courses as per the above chart as deemed fit.

8. A student may choose to overload his/her coursework by at most one course – carrying not more than 5 units - per se–ester:

   (a) Such courses may be chosen from one of the following

(i) the pool of courses listed as Electives for the program being pursued

   (ii) a general pool of courses listed as Graduate Level Electives available for all higher degree programs

   (iii) any other course under the conditions that the stipulated pre-requisites are met and that the Head of the Department of the student and Head of the Department offering the course both provide their consent

   (b) Such courses may not be counted towards the requirement stated in 1.(a) above.

9. A student who wants to pursue Dissertation may choose between doing the Dissertation on campus and doing the Dissertation in an external industrial / research organization. The Department must identify such locations/ organizations

as suitable for a student pursuing Dissertation in that discipline. If a student exercises the option of doing his/her Dissertation in an organization other than BITS, then the Department must identify a co-supervisor for the student from within the Department.

10. The Dissertation will carry 16 credit units for the nominal duration of 1 semester.
    - During this semester a student may not be permitted to do coursework.
    - A student –with the consent of the Department - may ex–end the duration of the Dissertation over two semesters while concurrently doing coursework during the semester.
    - If the student exercises option (b) then the total weight of the Dissertation will not exceed 25 credit units.
11. In addition to the above courses, the higher degree students will be required to register in the following course, unless the student clears a diagnostic test specially designed for the same.

    BITS F437 Technical Communication 3 0 3

(ii) MPH:

Total number of units required – 60 (Minimum) with a breakup as follows:

(a) Dissertation: 15 (Min) – 25 (Max) Units

OR

Practice School : 20 units

(b) Course work : 35 (Min) units

(other than Dissertation/Practice School)

Courses for the course work will be chosen from the list of Core and elective courses earmarked for each degree. Total number of courses is thirteen. In addition to these thirteen courses all the students are required to do one course on Technical Communication and two courses on Research Practice.

There is also a flexibility for students of Higher Degree Programmes to register in upto a maximum of one more elective, in addition to the prescribed number of electives. The grade obtained in the additional elective will also be counted towards the CGPA but cannot be used to meet the category-wise requirements of the degree. This additional elective can be from the pool of electives of the concerned degree or courses from other disciplines' Core and electives with the permission of HoD of the program pursued by the student and the HoD offering the course.

(iii) M.Phil.:

Total number of units required - 50 (Mi–imum) with a breakup as follows:

(a) Dissertation : 12 (Min.) - 25 (Ma–.) units

OR

Practice School : 20 units

(b) Course work : 25 units (min.)

(other than Dissertation/Practice School)

The courses for course work can be chosen from a list of General/Special courses earmarked for the degree. Wherever there is a need, courses can also be drawn from across the course offerings in various Higher Degree programmes as well as advanced First Degree level, provided the students are adequately prepared for the particular course.

(iv) M.B.A.: The course requirements of the MBA programme are spelt out in terms of courses belonging to different categories in the table below:

Category	No. of Units Required	No. of Courses Required
Core Courses	60	20
Elective(s)	12-24	4-6
Subtotal	72 (Min)	24 (Min)
PS OR Dissertation	20 16	1
Total	88 (Min)	25 (Min)

Courses for the course work will be chosen from the list of Core and elective courses earmarked for the MBA degree.

Dissertation: Normal registration for dissertation is after completion of course work. Normally 16 units of Dissertation will be assigned at the time of this registration. In case of programmes other than MBA, units upto a maximum of 25 may be permitted depending on the total time and work put in by an individual student and the registration in more than 16 units of Dissertation will be normally available only to students who have taken higher degree courses as electives in their first degree programmes or to professionals who have shown competence in some specialized courses through their professional involvement. Concurrent registration for a nominal 8 units per semester in Dissertation with course work is also permissible for motivated, well-prepared and hardworking students. Provision exists for the Dissertation to be carried out as work-integrated dissertation at recognized off-campus centres or in an organization where the student may get employment, subject to all the stipulations of Academic Regulations.

Practice School: Registration for Practice School is possible only after the completion of all course work. Concurrent registration of other courses with Practice School is not permitted. All clauses of Academic Regulations applicable to first degree PS courses will govern the operation of this Practice School also.

B. First Degree students seeking Higher Degree admission

A first degree student can choose upto a maximum of two higher degree courses as electives for his/her first degree from the pool of general/special courses of the corresponding higher degree. When such a student seeks admission to any of the Higher Degree programme of the institute, the student may be given exemption from these courses; however, the student will have to complete the total unit requirements of the higher degree. The minimum units in Dissertation for such a candidate will be increased by the same number of units as exempted from the course work so as to earn the minimum prescribed total units.

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester

Year	First Semester		U	Second Semester		U
M.E. Biotechnology						
I	BIO G512	Molecular Mechanism of Gene Expression	5	BITS G540	Research Practice	4
				BIO G524	Animal Cell Technology	5
	BIO G542	Advanced Cell and Molecular Biology	5	BIO G643	Plant Biotechnology	5
					Elective	*
	BIO G525	Environmental Biotechnology and Waste Management	5		Elective	*
		Elective	*			
			18			20
II	BIO G523	Advanced and Applied Microbiology	5	BITS G629T	Dissertation or	16 or
		Elective	*	BITS G639	Practice School	20
		Elective	*			
		Elective	*			
			17			16/20

M.E. Chemical* [The structure of this program is given in Page IV-104]								
Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester								
Year	**First Semester**			**U**	**Second Semester**			**U**
M.E. Civil – Infrastructure Engineering and Management								
I	CE	G515	Fundamentals of Systems Engineering	4	BITS	G540	Research Practice	4
	CE	G523	Transportation Systems Planning and Management	4	CE	G520	Infrastructure Planning and Management	4
	CE	G525	Water Resources Planning and Management	4			Elective	*
	CE	G527	Construction Management	4			Elective	*
				16				14
II			Elective	*	BITS	G629T	Dissertation	16
			Elective	*			or	or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				12				16/20
M.E. Civil – Structural Engineering								
I	CE	G551	Dynamics of Structures	4	BITS	G540	Research Practice	4
	CE	G552	Advanced Structural Mechanics and Stability	4	CE	G615	Earthquake Engineering	4
							Elective	*
	CE	G617	Advanced Structural Analysis	4			Elective	*
	CE	G619	Finite Element Analysis	5				
				17				14
II			Elective	*	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				12				16/20
M.E. Civil – Transportation Engineering								
I	CE	G534	Pavement Material Characterization	4	CE	G518	Pavement Analysis and Design	4
					CE	G566	Public Transportation	4
	CE	G565	Transportation Planning	4	BITS	G540	Research Practice	4
	CE	G567	Highway Design	4			Elective	*
	CE	G568	Traffic Systems Analysis	4			Elective	*
			Elective	*				
				19				18
II	BITS	G629T	Dissertation	16	BITS	G629T	Dissertation	16
			OR	OR			or	Or
			Electives (4 courses)	16	BITS	G639	Practice School	20
				16				16/20
M.E. Civil – Water Resource Engineering								
I	CE	G526	Systems Approach to Water Resources Modeling	4	BITS	G540	Research Practice	4
					CE	G558	Advanced Groundwater Hydrology	4
	CE	G555	Remote Sensing and GIS in Water Resources	4	CE	G559	Soft Computing in Water Resources	4
	CE	G556	Advanced Computational Hydraulics	4			Elective	*
	CE	G557	Stochastic Hydrology	4				
				16				15
II			Elective	*	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				16				16/20

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester								
Year	**First Semester**			**U**	**Second Semester**			**U**
M.E. Communication Engineering								
	EEE	G613	Advanced Digital Signal Processing	5	BITS	G540	Research Practice	4
	EEE	G581	RF and Microwave Engineering	5	EEE	G592	Mobile and Personal	
	EEE	G612	Coding Theory and Practice	5			Communication	5
			Elective	*	EEE	G622	Advanced Digital Communication	5
							Elective	*
				18				17
	EEE	G591	Optical Communication	5	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				14				16/20
M.E. Computer Science								
I	CS	G525	Advanced Computer Networks	5	BITS	G540	Research Practice	4
	CS	G526	Advanced Algorithms and		CS	G513	Network Security	4
			Complexity	5	CS	G524	Advanced Computer Architecture	5
	CS	C623	Advanced Operating Systems	5			Elective	*
			Elective	*				
				18				16
II			Elective	*	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				12				16/20
M.E. Electrical – Power Electronics and Drives								
I	EEE	G542	Power Electronics Converter	5	BITS	G540	Research Practice	4
	EEE	G541	Distribution Apparatus and		EEE	G545	Control and Instrumentation Systems	5
			Configuration	5	EEE	G552	Solid State Drives	5
	EEE	G543	Power Devices microelectronics				Elective	*
			and selection	3				
			Elective	*				
				18				17
II	EEE	G546	System Simulation	5	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				14				16/20
M.E. Embedded Systems								
I	BITS	G553	Real Time Systems	5	BITS	G540	Research Practice	4
	EEE	G512	Embedded System Design	4	CS	G523	Software for Embedded Systems	5
			Elective	*	MEL	G642	VLSI Architecture	5
			Elective	*			Elective	*
				17				18
II	EEE	G626	Hardware Software Co-Design	5	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				17				16/20

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester									
Year	**First Semester**			**U**	**Second Semester**			**U**
M.E. Electronics & Control								
I	EEE	G559	Advanced Power Electronics	5	BITS	G540	Research Practice	4
	EEE	G621	Advanced Electronic Circuits	5	EEE	G512	Embedded System Design	5
	INSTR	G611	Advanced Control Systems	5	EEE	G552	Solid State Drives	5
				15				14
II	EEE	G546	Systems Simulation Lab	4			Elective	*
			Elective	*			Elective	*
			Elective	*			Elective	*
				10				9
III	BITS	G629T	Dissertation	16				
			or	or				
	BITS	G639	Practice School	20				
				16/20				
M.E. Microelectronics								
I	MEL	G611	IC Fabrication Technology	5	BITS	G540	Research Practice	4
	MEL	G621	VLSI Design	5	MEL	G632	Analog IC Design	5
	MEL	G631	Physics & Modeling of		MEL	G641	CAD for IC Design	5
			Microelectronic Devices	5			Elective	*
			Elective	*				
				19				18
II			Elective	*	BITS	G629T	Dissertation	16
			Elective	*			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				13				16/20
M.E. Manufacturing Systems Engineering								
I	EA	C412	Flexible Manufacturing Systems	4	BITS	G540	Research Practice	4
	ME	F443	Quality Control Assurance and		MSE	G512	Manufacturing Planning and	
			Reliability	3			Control	5
	ME	G511	Mechanism and Robotics	5			Elective	*
			Elective	*			Elective	*
				15				15
II	MSE	G521	World Class Manufacturing	5	BITS	G629T	Dissertation	16
	ITEB	G621	Supply Chain Management	4			or	Or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				15				16/20
M.E. Mechanical Engineering								
I	ME	F443	Quality Control Assurance and					
			Reliability	3	BITS	G540	Research Practice	4
	ME	G511	Mechanism and Robotics	5	ME	G611	Computer Aided Analysis and	
	ME	G512	Finite Element Methods	5			Design	5
			Elective	*			Elective	*
							Elective	*
				16				15
II	ME	G532	Machine Tool Engineering	5	BITS	G629T	Dissertation	16
	ME	G641	Theory of Elasticity and plasticity	5			or	or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				16				16/20

* *Minimum 3 Units*

Note: This is the suggested semesterwise pattern by the appropriate Senate appointed committee, subject to change if the situation warrants.

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester									
Year	**First Semester**				**U**	**Second Semester**			**U**
M.E. Design Engineering									
	DE	G631	Materials Testing and Technology		5	BITS	G540	Research Practice	4
	ME	G511	Mechanism and Robotics		5	ME	G611	Computer Aided Analysis and Design	5
I	ME	G512	Finite Element Methods		5			Elective	*
			Elective		*			Elective	*
					18				15
	DE	G531	Product Design		5	BITS	G629T	Dissertation	16
	DE	G611	Dynamics and Vibration		5			or	or
II			Elective		*	BITS	G639	Practice School	20
			Elective		*				
					16				16/20
M.E. Thermal Engineering									
	BITS	C462	Renewable Energy		3	BITS	G540	Research Practice	4
	ME	G533	Conduction and Radiation Heat			ME	G534	Convective Heat and Mass Transfer	5
I			Transfer		5			Elective	*
	ME	G621	Fluid Dynamics		5			Elective	*
			Elective		*				
					16				15
	ME	G514	Turbomachinery		5	BITS	G629T	Dissertation	16
	ME	G515	Computational Fluid Dynamics		5			or	or
II			Elective		*	BITS	G639	Practice School	20
			Elective		*				
					16				16/20
M. Pharma. Pharmacy									
	PHA	G532	Quality Assurance and			BITS	G540	Research Practice	4
			Regulatory Affairs		5	PHA	G611	Advanced Pharmacology	5
	PHA	G543	Clinical Research		5	PHA	G621	Advanced Medicinal Chemistry	5
I	PHA	G612	Pharmacokinetics and Clinical		5	PHA	G632	Dosage Form Design	5
			Pharmacy						
			Elective		*				
					18				19
			Elective		*	BITS	G629T	Dissertation	16
			Elective		*			or	or
II			Elective		*	BITS	G639	Practice School	20
			Elective		*				
					12				16/20

Semester-wise Pattern for Students Admitted to M. E. Sanitation Science, Technology and Management Programme in First Semester								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	SAN	G511	Sanitation Technology	5	SAN	G514	Sanitation financing and Project Management	5
	SAN	G512	Sanitation and Public Health	5	SAN	G515	Emergency Sanitation & Leadership	5
	SAN	G513	Sanitation Governance, Behaviour change and Advocacy	5	BITS	G540	Research Practice	4
			Elective I	*			Elective II	*
				18				**17**
	BITS	G562T	Dissertation	16	BITS	G563T	Dissertation	16
				16				**16**

** Minimum 3 Units*

This is the semester-wise pattern for students admitted in the given programme in First semester under track 3 option of Higher Degree programme (Page IV-109). It may be noted that the track 3 option of Higher degree structure is available in the bulletin with 1 year course work and 1 year dissertation. The Academic Governing Committee (AGC) may also look at offering this programme under track 1 and track 2 of structure of Higher degree programmes, if there is a need in future and report back to the Senate.

M. Pharma. Pharmacy – Pharmaceutics								
I	PHA	G532	Quality Assurance and Regulatory Affairs	5	BITS	G540	Research Practice	4
	PHA	G542	Advanced Physical Pharmaceutics	5	PHA	G535	Biomaterials	5
	PHA	G612	Pharmacokinetics and Clinical Pharmacy	5	PHA	G632	Dosage Form Design	5
			Elective	*			Elective	*
				18				17
II	PHA	G617	Advanced Drug Delivery Systems	5	BITS	G629T	Dissertation	16
			Elective	*			or	or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				14				16/20

** Minimum 3 Units*

Note: This is the suggested semesterwise pattern by the appropriate Senate appointed committee, subject to change if the situation warrants

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester									
Year	**First Semester**				**U**	**Second Semester**			**U**
M. Pharma. Pharmacy – Pharmaceutical Chemistry									
	PHA	G544	Advanced Pharmaceutical Chemistry		5	BITS	G540	Research Practice	4
	PHA	G541	Computer Aided Drug Design		5	PHA	G522	Chemistry of Macromolecules	4
I	PHA	G543	Clinical Research		5	PHA	G621	Advanced Medicinal Chemistry	5
			Elective		*			Elective	*
					18				16
	PHA	G618	Retrosynthetic Analysis		5	BITS	G629T	Dissertation	16
			Elective		*			or	or
II			Elective		*	BITS	G639	Practice School	20
			Elective		*				
					14				16/20
M. Pharma. Pharmacy – Pharmacology									
	PHA	G538	Immunopharmacology		4	BITS	G540	Research Practice	4
	PHA	G543	Clinical Research		5	PHA	G611	Advanced Pharmacology	5
	PHA	G619	Screening Methods and Techniques in Pharmacology		5			Elective	*
I			Elective		*			Elective	*
					17				15
	PHA	G624	Principles of Toxicology		5	BITS	G629T	Dissertation	16
	PHA	G625	Cellular and Molecular Pharmacology		5			or	or
II			Elective		*	BITS	G639	Practice School	20
			Elective		*				
					16				16/20

M.E. Software System									
	CS	F415	Data Mining	3	BITS	G540	Research Practice	4
	SS	G514	Object Oriented Analysis and		SS	G515	Data Ware Housing	5
			Design	4	SS	G653	Software Architecture	5
I	SS	G562	Software Engineering and				Elective	*
			Management	5				
			Elective	*				
				15				17
			Elective	*	BITS	G629T	Dissertation	16
			Elective	*			or	or
II			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				12				16/20

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester								
Year	**First Semester**			**U**	**Second Semester**			**U**
Master of Business Administration								
I	MBA	G501	Managerial Economics	3	MBA	G510	Human Resource Management	3
	MBA	G543	Leading Modern Organizations	3	MBA	G545	Management Science	3
	MBA	G544	Organizational Theory & Behaviour	3	MBA	G557	Economic Environment of Business	3
	MBA	G546	Business Statistics	3	MBA	G558	Operations and Supply Chain Management	3
	MBA	G547	Accounting for Managers	3	MBA	G559	Corporate Finance	3
	MBA	G548	Strategic Marketing	3	MBA	G560	Marketing Research & Metrics	3
	MBA	G549	Introduction to Systems & Sustainability	3	MBA	G561	Business Analytics	3
	MBA	G550	Critical and Design Thinking	3	MBA	G564	Decision Making	3
	MBA	G565	Information & Knowledge Management Systems	3				
				27				24
II	MBA	G566	Strategic Management	3	BITS	G561	Dissertation	16
	MBA	G567	Technology Innovation & Entrepreneurship	3			or	or
	MBA	G568	International Business Strategy & Operations	3	BITS	G560	Practice School	20
			Elective	*				
			Elective	*				
			Elective	*				
			Elective	*				
				21/25				16/20

* *Minimum 3 Units*

Note: This is the suggested semesterwise pattern by the appropriate Senate appointed committee, subject to change if the situation warrants.

Semesterwise Pattern for Students Admitted to Higher Degree Programmes in the First Semester								
Year	**First Semester**			**U**	**Second Semester**			**U**
Master in Public Health								
I	MPH	G510	Biostatistics & Computers in Public Health	5	MPH	G661	Research Methodology I	5
					MPH	G521	Health Care Management	4
	MPH	G512	Environmental and Occupational Health	4	MPH	G522	Preventive Nutrition & Health Promotion	4
	MPH	G513	Public Health & Diseases	4	MPH	G523	Epidemic & Disaster Management	4
	BITS	G515	Management Principles and Practices	4	MPH	G692	Epidemology	2
					MPH	G613	Health System and Society	2
	BITS	F437	Technical Communication	3				
				20				21
II	BITS	G540	Research Practice	4	BITS	G629 T	Dissertation	16
	MPH	G531	Health Economics & Financial Management	4			or	or
			Elective	*	BITS	G639	Practice School	20
			Elective	*				
			Elective	*				
				17				16/20

* *Minimum 3 Units*

Note: This is the suggested semesterwise pattern by the appropriate Senate appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M. Phil. Chemistry Programme in First Semester									
Year	**First Semester**			**U**	**Second Semester**			**U**
	BITS	G659	Technical Communication	4	BITS	G620	Professional Practice I	3
	CHEM	G551	Advanced Organic Chemistry	5	CHEM	G552	Advanced Inorganic Chemistry	5
I	CHEM	G553	Advanced Physical Chemistry	5	CHEM	G554	Physical Methods in Chemistry	5
	CHEM	G555	Chemistry of Life Processes	4			Elective	3
				18				16
	BITS	G621	Professional Practice II	3	BITS	G629T	Dissertation	16
			Elective	*			or	or
II			Elective	*	BITS	G639	Practice School	20
			Elective	*				
				12				16/20

** Minimum 3 units*

Note: This is a currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M. Phil. in Liberal Studies Programme in First Semester								
Year	**First Semester**			**U**	**Second Semester**			**U**
	HSS	G511	Philosophical Foundations of Liberal Studies	5	BITS	G661	Research Methodology I	5
	HSS	G512	Theoretical Approaches to Liberal Studies	5	BITS	E583	Case studies I	5
I	BITS	G518	Writing Seminar	5			Elective II	*
			Elective I	*			Elective III OR	5
				18	BITS	G565	Dissertation (5 Unit)	**18**
II	BITS	G561T	Dissertation	16				
				16				

** Minimum 3 Units*

While the above semester-wise pattern shows a 3-semester structure, a meritorious student may be able to complete the programme in 2 semesters and an additional summer term. In such a case, a partial dissertation of 5 units may be taken in place of Elective 3. This will be followed by a Dissertation of 10 units during the summer term.

Semester-wise Pattern for Students Admitted to M. E. Computer Science with Specialization in Information Security with B.Sc. input								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	CS	F111	Computer Programming	4	MGTS	F211	Principles of Management	3
	BITS	F437	Technical Communication	3	MATH	F212	Optimization	3
	MATH	F113	Probability and Statistics	3	BITS	F463	Cryptography	3
	CS	F215	Digital Design	4	BITS	F345	Information Law and	
	CS	F222	Discrete Structures for				Cyber Law	3
			Computer Science	3	IS	F242	Computer Organization	4
	MATH	F231	Number Theory	3	CS	F211	Data Structures & Algorithms	4
				20				20
Summer	CS	F404	Computer Crime and Forensics					2
	CS	F213	Object Oriented Programming					4
	CS	F468	Information Security Project					3
								9
II	CS	F351	Theory of Computation	3	CS	F303	Computer Networks	4
	CS	F372	Operating Systems	3	CS	F212	Database Systems	4
	IS	F341	Software Engineering	4	CS	G517	Network and System Security	4
	CS	G524	Advanced Computer Architecture	5	CS	F364	Design and Analysis of Algorithms	3
	CS	F301	Principles of Programming Languages	2	CS	F406	Ethical Hacking	2
							Elective	*
			Elective	*				
				20 (min)				20 (min)
Summer	CS	G566	Secure Software Engineering					5
	CS	F468	Information Security Project					3
			Elective					*
								11 (min)
III	CS	G623	Advanced Operating Systems	5	BITS	G639	Practice School	20
	CS	G525	Advanced Computer Networks	5				
	CS	G526	Advanced Algorithms and Complexity	5	Or			Or
	BITS	G540	Research practice	4				
					BITS	G629T	Dissertation	16
			Elective	*				
				20 (min)				16 (min)

** Minimum 3 units*

Note: This is a currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

LIST OF COURSES FOR M.E./M.PHARM./ MBA PROGRAMMES:

Biotechnology

Core Courses

BIO G512	Molecular Mechanism of Gene Expression	5
BIO G523	Advanced and Applied Microbiology	5
BIO G524	Animal Cell Technology	5
BIO G525	Environmental Biotechnology and Waste Management	5
BIO G542	Advanced Cell and Molecular Biology	5
BIO G643	Plant Biotechnology	5

Elective Courses (any seven)

BIO F242	Introduction to Bioinformatics	3 0 3
BIO F417	Biomolecular Modeling	3 0 3
BIO F421	Enzymology	3 0 3
BIO F441	Biochemical Engineering	3 0 3
BIO G510	Application of Computers and Statistics in Biology	5
BIO G513	Microbial and Fermentation Technology	3 2 5
BIO G514	Molecular Immunology	3 2 5
BIO G515	Stem Cell and Regenrative Biology	3 1 4
BIO G522	Interferon Technology	3 1 4
BIO G526	Cancer Biology	3 2 5
BIO G532	Biostatistics and Biomodelling	3 1 4
BIO G544	Bioremediation and bio-metallurgy	5
BIO G545	Molecular Parasitology & Vector Biology	5
BIO G561	Advances in Recombinant DNA Technology	3 2 5
BIO G570	Recent Developments in Biology	1 0 1
BIO G612	Human Genetics	3 2 5
BIO G631	Membrane and Liposome Technology	3 1 4
BIO G632	Transgenic Technology	3 2 5
BIO G642	Experimental Techniques	4*
BIO G651	Protein and Enzyme Bioengineering	3 2 5
BIO G661	Gene Toxicology	3 1 4
BIO G671	Bioconversion Technology	3 2 5
BIOT F422	Nanobiotechnology	3 0 3
BITS F418	Introduction to Biomedical Engineering	3 1 4
BITS F467	Bioethics and Biosafety	3 0 3
***BIO F418**	**Genetic Engineering Techniques**	**1 3 4**

***BIO G510 Application of Computers and Statistics in Biology (5)** *may be required to be completed as a deficiency courses for ME Biotechnology Programme.

Chemical

Core Courses

CHE G523	Mathematical Methods in Chemical Engineering	5
CHE G614	Advanced Heat Transfer	5
CHE G622	Advanced Chemical Engineering Thermodynamics	5
CHE G641	Reaction Engineering	5

Elective Courses (any six)

BIO G544	Bioremediation and Biometallurgy	5
BITS F318	Science and Engineering of Solid Surfaces	3 0 3
BITS F418	Introduction to Biomedical Engineering	3 1 4
BITS F429	Nanotechnology for Renewable Energy and Environment	3 1 4
CHE F413	Process Plant Safety	3 0 3
CHE F421	Biochemical Engineering	3 0 3
CHE F423	Membrane Science and Engineering	3 0 3
CHE F424	Rheology of complex fluids	3 0 3
CHE F471	Advanced Process Control	3 0 3
CHE G512	Petroleum Refining and Petrochemicals	3 1 4
CHE G513	Environmental Management Systems	3 2 5
CHE G522	Polymer Technology	3 1 4
CHE G524	Introduction to Multiphase flow	3 1 4
CHE G525	Chemical Process and Equipment Design	3 1 4
CHE G526	Nuclear Engineering	3 1 4
CHE G527	Energy Conservation and Management	3 1 4
CHE G528	Introduction to Nano Science & Technology	3 1 4
CHE G529	Paper and Pulp Technology	3 1 4
CHE G532	Alternate Energy Resources	3 1 4
CHE G533	Petroleum Product Characterization	3 2 5
CHE G551	Advanced Separation Technology	3 2 5
CHE G553	Statistical Thermodynamics	4
CHE G554	Computational Fluid Dynamics	4
CHE G556	Electrochemical Engineering	4
CHE G557	Energy Systems Engineering	4
CHE G558	Chemical Process Optimization	4
CHE G568	Modeling and Simulation in Petroleum Refining	4
CHE G613	Advanced Mass Transfer	5
CHE G617	Petroleum Refinery Engineering	3 2 5
CHE G618	Petroleum Downstream Processing	3 2 5
CHE G619	Process Intensification	3 2 5
CHE G620	Energy Integration Analysis	3 2 5

Chemical with Specialization in Petroleum Engineering

Core Courses

CHE G523	Mathematical Methods in Chemical Engineering	5
CHE G616	Petroleum Reservoir Engineering	5
CHE G617	Petroleum Refinery Engineering	5
CHE G618	Petroleum Downstream Processing	5
CHE G622	Advanced Chemical Engineering Thermodynamics	5

CHE G641	Reaction Engineering	5
Elective Courses (any six)		
BIO G544	Bioremediation and Biometallurgy	5
BITS F418	Introduction to Biomedical Engineering	3 1 4
CHE F471	Advanced Process Control	3 1 4
CHE G511	Fluidization Engineering	3 1 4
CHE G513	Environmental Management Systems	3 2 5
CHE G522	Polymer Technology	3 1 4
CHE G532	Alternate Energy Resources	3 1 4
CHE G533	Petroleum Product Characterization	3 2 5
CHE G551	Advanced Separation Technology	3 2 5
CHE G567	Natural Gas Processing	4
CHE G568	Modeling and Simulation in Petroleum Refining	4
CHE G569	Petroleum Production Economics	4
CHE G613	Advanced Mass Transfer	3 2 5
CHE G614	Advanced Heat Transfer	3 2 5
CHE G619	Process Intensification	3 2 5
CHE G620	Energy Integration Analysis	3 2 5
MST G521	Material Characterization Techniques	3 2 5
Civil with Specialization in Infrastructure Engineering and Management		
Core Courses		
CE G515	Fundamentals of Systems Engineering	4
CE G520	Infrastructure Planning and Management	4
CE G523	Transportation Systems Planning and Management	4
CE G525	Water Resources Planning and Management	4
CE G527	Construction Management	4
Elective Courses (any six)		
BITS F469	Financing Infrastructure Projects	3 0 3
BITS F474	Rural Infrastructure Planning	3 0 3
BITS F494	Environmental Impact Assessment	3 1 4
CE F431	Principles of Geographical Information System	3 0 3
CE F433	Remote Sensing and Image Processing	3 0 3
CE G512	Topics in Environmental Engineering	3 1 4
CE G513	Advanced Computational Techniques	3 1 4
CE G516	Multicriteria Analysis in Engineering	3 1 4
CE G517	Waste Management Systems	3 1 4
CE G518	Pavement Design & Analysis	3 1 4
CE G522	Pavement Design, Maintenance and Management	3 2 5
CE G524	Urban Mass Transit Planning, Operations and Management	3 1 4
CE G526	Systems Approach to Water Resources Modelling	3 1 4
CE G528	Selection of Construction Equipment	3 1 4
	and Modelling	
CE G529	Construction Project Control Systems	3 1 4
CE G530	Design of Construction Operation	3 1 4
CE G531	Environmental Conservation	3 1 4
CE G533	Advanced Composite Materials for Structures	3 1 4
CE G537	Transportation Economics and Finance	3 1 4
CE G538	Project Planning & Management	3 1 4
CE G542	Water Resources and Management	3 1 4
CE G545	Airport Planning & Design	3 1 4
CE G562	Advanced Concrete Technology	3 1 4
CE G563	Stochastic Methods in Civil Engineering	3 1 4
CE G564	Structural Health Assessment and Rehabilitation	3 1 4
CE G610	Computer Aided Analysis and Design in Civil Engineering	3 2 5
CE G614	Prestressed Concrete	3 1 4
CE G616	Bridge Engineering	3 1 4
CE G618	Design of Multi-storey Structures	3 1 4
CE G619	Finite Element Analysis	5
CE G632	Design of Foundation for Dynamic Loads	3 1 4
Civil with Specialization in Structural Engineering		
Core Courses		
CE G551	Dynamics of Structures	4
CE G552	Advanced Structural Mechanics and Stability	4
CE G615	Earthquake Engineering	4
CE G617	Advanced Structural Analysis	4
CE G619	Finite Element Analysis	5
Elective Courses (any six)		
CE G511	Matrix Method in Civil Engineering	3 2 5
CE G513	Advanced Computational Techniques	3 1 4
CE G514	Structural Optimization	3 1 4
CE G521	Topics in Structural Engineering	3 2 5
CE G532	Advanced Soil Mechanics	3 1 4
CE G533	Advanced Composite Materials for Structures	3 1 4
CE G544	Fracture Mechanics of Concrete Structures	3 1 4
CE G553	Theory of Plates and Shells	3 1 4
CE G554	Advanced Structural Design	3 1 4
CE G562	Advanced Concrete Technology	4
CE G563	Stochastic Methods in Civil Engineering	3 1 4
CE G564	Structural Health Assessment and Rehabilitation	3 1 4
CE G610	Computer Aided Analysis and Design in Civil Engineering	3 2 5
CE G611	Computer Aided Analysis and Design	3 2 5
CE G612	Advanced Steel Structures	3 1 4

CE G613	Advanced Concrete Structures	3 1 4
CE G614	Prestressed Concrete Structures	3 1 4
CE G616	Bridge Engineering	3 1 4
CE G618	Design of Multi-storey Structures	3 1 4
CE G620	Advanced Foundation Engineering	3 1 4
CE G621	Fluid Dynamics	3 2 5
CE G622	Soil-Structure Interaction	3 1 4
CE G623	Ground Improvement Techniques	3 1 4
CE G631	Selected Topics in Soil Mechanics and Geotechnical Engineering	3 1 4
CE G632	Design of Foundation for Dynamic Loads	3 1 4
CE G641	Theory of Elasticity and Plasticity	3 2 5

Civil with Specialization in Transportation Engineering

Core Courses

CE G518	Pavement Analysis and Design	4
CE G534	Pavement Material Characterization	4
CE G565	Transportation Planning	3 1 4
CE G566	Public Transportation	3 1 4
CE G567	Highway Design	3 1 4
CE G568	Traffic Systems Analysis	3 1 4

Elective Courses (any six)

BITS F494	Environmental Impact Assessment	3 1 4
BITS G529	Research Project I	6
CE G516	Multicriteria Analysis in Engineering	3 1 4
CE G520	Infrastructure Planning and Management	3 1 4
CE G528	Selection of Construction Equipment and Modeling	3 1 4
CE G538	Project Planning & Management	3 1 4
CE G539	Introduction to Discrete Choice Theory	4*
CE G543	Traffic Flow Theory	3 1 4
CE G545	Airport Planning and Design	3 1 4
CE G547	Pavement Failures, Evaluation and Rehabilitation	3 1 4
CE G549	Rural Road Technology	3 1 4
CE G563	Stochastic Methods in Civil Engineering	3 1 4
CE G569	Transportation Economics	3 1 4
CE G570	Highway Construction Technology	3 1 4
CE G571	Road Asset Management	3 1 4
CE G572	Transportation Data Analytics	3 1 4
CE G573	Road Safety and Accident Analysis	3 1 4
CE G574	Pavement Maintenance	3 1 4
CE G575	Freight Transportation	3 1 4
CE G616	Bridge Engineering	3 1 4
CE G619	Finite Element Analysis	3 2 5
CE G632	Design of Foundation for Dynamic Loads	3 1 4

Civil with Specialization in Water Resource Engineering

Core Courses

CE G526	Systems Approach to Water Resources Modeling	4
CE G555	Remote Sensing and GIS in Water Resources	4
CE G556	Advanced Computational Hydraulics	4
CE G557	Stochastic Hydrology	4
CE G558	Advanced Groundwater Hydrology	4
CE G559	Soft Computing in Water Resources	4

Elective Courses (any five)

BITS F494	Environmental Impact Assessment	3 1 4
CE G516	Multicriteria Analysis in Engineering	3 1 4
CE G517	Waste Management Systems	3 1 4
CE G525	Water Resources Planning and Management	3 1 4
CE G560	Hydrologic Simulation Laboratory	4
CE G561	Impact of Climate Change on Water Resources and Environment	4
CE G621	Fluid Dynamics	3 2 5

Communication Engineering

Core Courses

EEE G581	RF and Microwave Engineering	5
EEE G591	Optical Communication	5
EEE G592	Mobile and Personal Communication	5
EEE G612	Coding Theory and Practice	5
EEE G613	Advanced Digital Signal Processing	5
EEE G622	Advanced Digital Communication	5

Elective Courses (any five)

BITS F415	Introduction to MEMS	4
BITS G553	Real Time Systems	3 1 4
BITS G554	Data Compression	3 1 4
CS F303	Computer Networks	3 0 3
CS F401	Multimedia Computing	3 0 3
CS F413	Internetworking Technologies	3 0 3
CS G541	Pervasive Computing	4
CS G553	Reconfigurable Computing	5
CS G555	System Specification and Modeling	3 3 4
EEE F414	Telecommunication Switching Systems and Networks	3 0 3
EEE F430	Green Communications and Networks	3 0 3
EEE F472	Satellite Communication	3 0 3
EEE F474	Antenna Theory and Design	3 1 4
EEE G510	RF Microelectronics	5
EEE G512	Embedded System Design	3 1 4
EEE G513	Machine Learning for Electronics Engineers	4
EEE G521	Optoelectronic Devices, Circuits and Systems	3 2 5
EEE G522	Advanced Satellite Communication	5*
EEE G582	Telecom Network Management	3 2 5

EEE G613	Advanced Digital Signal Processing	5
EEE G614	Advanced Wireless Communications	3 2 5
EEE G626	Hardware Software Co-Design	4
EEE G627	Network Embedded Application	4
EEE G641	Applied Estimation Theory	3 2 5
IS F462	Network Programming	3 0 3
MEL G621	VLSI Design	3 2 5
MEL G622	Introduction to Artificial Neural networks	2 2 4

Computer Science

Core Courses

CS G513	Network Security	4
CS G524	Advanced Computer Architecture	5
CS G525	Advanced Computer Networks	5
CS G526	Advanced Algorithms and Complexity	5
CS G623	Advanced Operating Systems	5

Elective Courses (any six)

BITS F452	Blockchain Technology	3 0 3
BITS F453	Computational Learning Theory	3 0 3
BITS F454	Bio-Inspired Intelligence: Algorithms and Applications	3 0 3
BITS F464	Machine Learning	3 0 3
BITS G553	Real-Time Systems	5
CS F402	Computational Geometry	3 0 3
CS F407	Artificial Intelligence	3 0 3
CS F413	Internetworking Technologies	3 0 3
CS F415	Data Mining	3 0 3
CS F422	Parallel Computing	3 0 3
CS F425	Deep Learning	3 0 3
CS F426	Graph Mining	3 1 4
CS F427	Performance Analysis of Computer Networks	3 0 3
CS F428	Special Topic in Computer Science	1 0 1
CS F441	NetSelected topics from Computer Science	
CS F446	Data Storage Technologies & Networks	3 0 3
CS F469	Information Retrieval	3 0 3
CS G516	Advanced Database Systems	3 1 4
CS G518	Internet of Things: Design and Development	3 1 4
CS G519	Social Media Analytics	3 1 4
CS G520	Advanced Data Mining	3 1 4
CS G523	Software for Embedded Systems	3 2 5
CS G527	Cloud Computing	5
CS G541	Pervasive Computing	4
CS G551	Advance Compilation Techniques	5
CS G553	Reconfigurable Computing	5
CS G554	Distributed Data Systems	3 2 5
CS G568	Network Security Project	0 3 3
CS G612	Fault Tolerant System Design	2 3 5
EEE G512	Embedded System Design	3 1 4
EEE G582	Telecom Network management	5
EEE G627	Networked Embedded Applications	3 1 4
IS F462	Network Programming	3 0 3
SS G514	Object Oriented Analysis and Design	4
SS G515	Data Ware Housing	5
SS G552	Software Testing Methodologies	4
SS G562	Software Engineering and Management	5
SS G653	Software Architecture	5

Design Engineering

Core Courses

DE G531	Product Design	5
DE G611	Dynamics and Vibration	5
DE G631	Materials Testing and Technology	5
ME G511	Mechanism and Robotics	5
ME G512	Finite Element Methods	5
ME G611	Computer Aided Analysis and Design	5

Elective Courses (any five)

BITS F415	Introduction to MEMS	3 1 4
DE G513	Tribology	3 2 5
DE G514	Fracture Mechanics	3 2 5
DE G522	Design Projects	3 2 5
ME F423	Micro Fluidics and its Application	4*
ME G515	Computational Fluid Dynamics	3 2 5
ME G521	Mechanical System Design	3 2 5
ME G532	Machine Tool Engineering	3 2 5
ME G535	Advanced Engineering Mathematics	3 2 5
ME G612	Plastics Engineering	3 2 5
ME G641	Theory of Elasticity and Plasticity	3 2 5
MSE G511	Mechatronics	3 2 5
MSE G531	Concurrent Engineering	3 2 5
MST G511	Nondestructive Testing Techniques	3 2 5
MST G522	Advanced Composites	3 2 5
MST G531	Experimental Stress Analysis Techniques	3 2 5

Electrical with specialization in Power Electronics & Drives

Core Courses

EEE G541	Distribution Apparatus and Configuration	5
EEE G542	Power Electronics Converter	5
EEE G543	Power Devices Microelectronics and Selection	3
EEE G545	Control and Instrumentation Systems	5
EEE G546	System Simulation Lab.	5
EEE G552	Solid State Drives	5

Elective Courses (any five)

BITS F462	Renewable Energy	3 0 3
CHE G526	Nuclear Engineering	3 1 4
EEE F422	Modern Control Systems	3 0 3
EEE F462	Advanced Power Systems	3 0 3
EEE G544	Steady State and Dynamics of Electrical Motors	3 2 5
EEE G553	Utility Applications of Power Electronics	3 0 3
EEE G554	Soft Switching ConverterTechnologies	3 0 3
EEE G555	Transformer and Motor Design	3 0 3
EEE G557	Drives for Electric Traction	3 0 3
EEE G558	DSP based Implementation Drivers	3 0 3
EEE G593	Power Quality	5
MEL G622	Introduction to Artificial Neural networks	2 2 4

Embedded Systems

Core Courses

BITS G553	Real Time Systems	5
CS G523	Software for Embedded Systems	5
EEE G512	Embedded System Design	3 1 4
EEE G626	Hardware Software Co-Design	5
MEL G642	VLSI Architecture	5

Elective Courses (any six)

BITS F415	Introduction to MEMS	4
CS G518	Internet of Things: Design and Development	3 1 4
CS G541	Pervasive Computing	4
CS G553	Reconfigurable Computing	5
CS G611	Distributed Processing Systems	2 2 4
CS G612	Fault Tolerant System Design	2 3 5
EEE F434	Digital Signal Processing	3 1 4
EEE G513	Machine Learning for Electronics Engineers	4
EEE G547	Device Drivers	3 2 5
EEE G594	Advanced VLSI Devices	5
EEE G595	Nanoelectronics and Nanophotonics	5
EEE G613	Advanced Digital Signal Processing	5
EEE G625	Safety Critical Embedded System Design	4
EEE G627	Network Embedded Application #	4
MEL G531	Testable Design and Fault Tolerant Computing	3 2 5
MEL G621	VLSI Design	3 2 5
MEL G622	Introduction to Artificial Neural networks	2 2 4
MEL G623	Advanced VLSI Design	5
MEL G624	Advanced VLSI Architectures	5
MEL G626	VLSI Test and Testability	5
MSE G511	Mechatronics	3 2 5

M.E. Electronics and Control

Core Courses

EEE G512	Embedded System Design	4
EEE G546	Systems Simulation Lab	4
EEE G552	Solid State Drives	5
EEE G559	Advanced Power Electronics	5
EEE G621	Advanced Electronic Circuits	5
INSTR G611	Advanced Control Systems	5

Elective Courses (any five)

BITS F415	Introduction to MEMS	3 1 4
BITS G654	Advanced Instrumentation Techniques	5
EEE F422	Modern Control Systems	3 0 3
EEE G521	Optoelectronic Devices, Circuits & Systems	5
EEE G544	Steady State and Dynamics of Electric Motors	5
EEE G545	Control and Instrumentation Systems	5
EEE G553	Utility Applications of Power Electronics	3
EEE G554	Soft Switching Converter Technologies	3
EEE G556	DSP Based Control of Electric Drives	3
EEE G593	Power Quality	5
EEE G613	Advanced Digital Signal Processing	5
ME G516	Energy Systems Engineering	5
MSE G511	Mechatronics	3 2 5

Manufacturing Systems Engineering

Core Courses

BITS F431	Flexible Manufacturing Systems	4
ITEB G621	Supply Chain Management	4
ME F443	Quality Control Assurance and Reliability	3
ME G511	Mechanism and Robotics	5
MSE G512	Manufacturing Planning and Control	5
MSE G521	World Class Manufacturing	5

Elective Courses (any five)

DE G522	Design Projects	3 2 5
DE G531	Product Design	3 2 5
ME G535	Advanced Engineering Mathematics	3 2 5
ME G538	Toyota Production System	3 2 5
ME G539	Computer Integrated Manufacturing	3 2 5
MSE G511	Mechatronics	3 2 5
MSE G513	Maintenance Engineering	3 1 4
MSE G514	Leadership and Managing Change	3 1 4
MSE G531	Concurrent Engineering	3 2 5

Mechanical Engineering

Core Courses

ME F443	Quality Control Assurance and Reliability	3
ME G511	Mechanism and Robotics	5
ME G512	Finite Element Methods	5
ME G532	Machine Tool Engineering	5
ME G611	Computer Aided Analysis and Design	5
ME G641	Theory of Elasticity and Plasticity	5

Elective Courses (any five)

BITS F415	Introduction to MEMS	3 1 4
DE G513	Tribology	3 2 5
DE G522	Design Projects	3 2 5
DE G531	Product Design	3 2 5
DE G611	Dynamics and Vibrations	3 2 5
ME F423	Micro Fluidics and its Application	4*
ME F472	Precision Engineering	3 0 3
ME F483	Wind Energy	3 0 3
ME G513	Heating and Cooling of Buildings	3 2 5
ME G514	Turbomachinery	3 2 5
ME G515	Computational Fluid Dynamics	3 2 5
ME G535	Advanced Engineering Mathematics	3 2 5
ME G631	Advanced Heat Transfer	3 2 5

Mechanical with specialization in Thermal Engineering

Core Courses

BITS F462	Renewable Energy	3
ME G514	Turbomachinery	5
ME G515	Computational Fluid Dynamics	5
ME G533	Conduction and Radiation Heat Transer	5
ME G534	Convective Heat and Mass Transfer	5
ME G621	Fluid Dynamics	5

Electives Courses (any five)

BITS F415	Introduction to MEMS	4*
BITS F417	Micro-fluidics and its Applications	4*
ME F433	Solar Thermal Process Engineering	3 1 4
ME F461	Refrigeration & Air-conditioning	3 0 3
ME F482	Combustion	3 0 3
ME F483	Wind Energy	3 0 3
ME G513	Heating and Cooling of Buildings	5

ME G516	Energy Systems Engineering	5
ME G535	Advanced Engineering Mathematics	5
ME G536	Thermal Equipment Design	5
ME G537	Cryogenic Engineering	5
Microelectronics		
Core Courses		
MEL G611	IC Fabrication Technology	5
MEL G621	VLSI Design	5
MEL G631	Physics & Modeling of Microelectronic Devices	5
MEL G632	Analog IC Design	5
MEL G641	CAD for IC Design	5
Elective Courses (any six)		
BITS F415	Introduction to MEMS	3 1 4
CS G518	Internet of Things: Design and Development	3 1 4
CS G553	Reconfigurable Computing	5
CS G562	Advanced Architecture and Performance Evaluation	3 2 5
CS G612	Fault Tolerant System Design	2 3 5
EEE F419	Flexible and Stretchable Electronics	3 1 4
EEE F434	Digital Signal Processing	3 1 4
EEE G510	RF Microelectronics	5
EEE G512	Embedded System Design	3 1 4
EEE G513	Machine Learning for Electronics Engineers	4
EEE G514	Nanoelectronic Memories and Technology	3 2 5
EEE G522	Advanced Satellite Communication	5
EEE G594	Advanced VLSI Devices	5
EEE G595	Nanoelectronics and Nanophotonics	5
EEE G613	Advanced Digital Signal Processing	5
EEE G626	Hardware Software Co-Design	4
MEL G512	Optoelectronic Devices Circuits and Systems	3 2 5
MEL G514	Nanoelectronic Memories and Technology	3 2 5
MEL G531	Testable Design and Fault Tolerant Computing	3 2 5
MEL G612	Integrated Electronics Design	2 2 4
MEL G622	Introduction to Artificial Neural networks	2 2 4
MEL G623	Advanced VLSI Design	5
MEL G624	Advanced VLSI Architectures	5
MEL G625	Advanced Analog and Mixed Signal Design	5
MEL G626	VLSI Test and Testability	5
MEL G642	VLSI Architectures	2 2 4
Pharmacy		
Core Courses		
PHA G532	Quality Assurance and Regulatory Affairs	5
PHA G543	Clinical Research	5
PHA G611	Advanced Pharmacology	5
PHA G612	Pharmacokinetics and Clinical Pharmacy	5
PHA G621	Advanced Medicinal Chemistry	5
PHA G632	Dosage Form Design	5
Elective Courses (any five)		
BIO F417	Biomolecular Modelling	3 0 3
BITS F467	Bioethics and Biosafety	3 0 3
PHA G521	Molecular Biology and Immunology	3 1 4
PHA G541	Computer Aided Drug Design	3 2 5
PHA G542	Advanced Physical Pharmaceutics	3 2 5
PHA G544	Advanced Pharmaceutical Chemistry	3 2 5
PHA G545	Intellectual property rights and Pharmaceuticals	3 0 3
PHA G547	Quality-by-Design in Pharmaceutical Product Development	3 2 5
PHA G548	Chemistry of Natural Drugs	3 2 5
PHA G613	Pharmaceutical Biotechnology	3 2 5
PHA G614	Clinical Pharmacy and Therapeutics	3 2 5
PHA G615	Pharmacy Practice	3 2 5
PHA G616	Pharmaceutical Administration and Management	3 2 5
PHA G619	Screening Methods & Techniques in Pharmacology	5*
PHA G622	Chemistry of Natural Drugs and Macromolecules	3 2 5
PHA G625	Cellular and Molecular Pharmacology	5
PHA G642	Laboratory Projects	6

PHA G540 Modern Pharmaceutical Analytical Techniques

PHA G546 Pharmaceutical Biostatistics (3 0 3)

may be required to be completed as a deficiency courses for M. Pharm. Programme.

M. Pharm. With specialization in Pharmaceutics		
Core Courses		
PHA G532	Quality Assurance and Regulatory Affairs	5
PHA G535	Biomaterials	5
PHA G542	Advanced Physical Pharmaceutics	5
PHA G612	Pharmacokinetics and Clinical Pharmacy	5
PHA G617	Advanced Drug Delivery Systems	5
PHA G632	Dosage Form Design	5
Elective Courses (any five)		
BITS F467	Bioethics and Biosafety	3 0 3
PHA G536	Cosmetics and Cosmeceuticals	3 2 5
PHA G537	Parenteral Product Development	5
PHA G543	Clinical Research	5
PHA G545	Intellectual property rights and Pharmaceuticals	3 0 3
PHA G547	Quality-by-Design in Pharmaceutical Product Development	3 2 5
PHA G613	Pharmaceutical Biotechnology	3 2 5
PHA G616	Pharmaceutical Administration and Management	3 2 5
PHA G619	Screening Methods & Techniques in Pharmacology	5*
PHA G623	Pharmaceutical Applications of Polymers and Biopolymers	5
PHA G642	Laboratory Projects	6

PHA G540 Modern Pharmaceutical Analytical Techniques

PHA G546 Pharmaceutical Biostatistics (3 0 3)

may be required to be completed as a deficiency courses for M. Pharm. With specialization in Pharmaceutics Programme.

M. Pharm. With specialization in Pharmaceutical Chemistry		
Core Courses		
PHA G522	Chemistry of Macromolecules	4
PHA G541	Computer Aided Drug Design	5

PHA G543	Clinical Research	5
PHA G544	Advanced Pharmaceutical Chemistry	3 2 5
PHA G618	Retrosynthetic Analysis	5
PHA G621	Advanced Medicinal Chemistry	5
Elective Courses (any five)		
BITS F467	Bioethics and Biosafety	3 0 3
PHA G532	Quality Assurance and Regulatory Affairs	3 2 5
PHA G533	Pharmaceutical Process Chemistry	4
PHA G534	Separation and Structure Elucidation Techniques	4
PHA G545	Intellectual property rights and Pharmaceuticals	3 0 3
PHA G548	Chemistry of Natural Drugs	3 2 5
PHA G613	Pharmaceutical Biotechnology	3 2 5
PHA G619	Screening Methods & Techniques in Pharmacology	5*
PHA G642	Laboratory Projects	6

PHA G540 Modern Pharmaceutical Analytical Techniques

PHA G546 Pharmaceutical Biostatistics (3 0 3)

may be required to be completed as a deficiency courses for M. Pharm. With specialization in Pharmaceutical Chemistry Programme.

M. Pharm. With specialization in Pharmacology

Core Courses

PHA G538	Immunopharmacology	4
PHA G543	Clinical Research	5
PHA G619	Screening Methods and Techniques in Pharmacology	3 2 5
PHA G611	Advanced Pharmacology	3 2 5
PHA G624	Principles of Toxicology	5
PHA G625	Cellular and Molecular Pharmacology	5
Elective Courses (any five)		
BITS F467	Bioethics and Biosafety	3 0 3
PHA G532	Quality Assurance and Regulatory Affairs	3 2 5
PHA G539	Principles of Drug Discovery	4
PHA G545	Intellectual Property Rights and Pharmaceuticals	3 0 3
PHA G612	Pharmacokinetics and Clinical Pharmacy	3 2 5
PHA G614	Clinical Pharmacy and Therapeutics	3 2 5
PHA G623	Pharmaceutical Applications of Polymers	5
PHA G626	Pharmacovigilance	4
PHA G627	Medical Devices and Testing	4
PHA G642	Laboratory Projects	6

PHA G540 Modern Pharmaceutical Analytical Techniques

PHA G546 Pharmaceutical Biostatistics (3 0 3)

may be required to be completed as a deficiency courses for M. Pharm. With specialization in Pharmacology Programme.

Software Systems

Core Courses

CS F 415	Data Mining	3
SS G514	Object Oriented Analysis and Design	4
SS G515	Data Ware Housing	5
SS G562	Software Engineering and Management	5
SS G653	Software Architecture	5
Elective Courses (any six)		
BITS F452	Blockchain Technology	3 0 3
BITS F464	Machine Learning	3 0 3
	Real-Time Systems	5
CS F401	Multimedia Computing	3 0 3
CS F402	Computational Geometry	3 0 3
CS F407	Artificial Intelligence	3 0 3
CS F413	Internetworking Technologies	3 0 3
CS F422	Parallel Computing	3 0 3
CS F425	Deep Learning	3 0 3
CS F426	Graph Mining	3 1 4
CS F427	Performance Analysis of Computer Networks	3 0 3
CS F428	Special Topic in Computer Science	1 0 1
CS F441	Selected topics from Computer Science	3
	Data Storage & Networks	3 0 3
CS F469	Information Retrieval	3 0 3
CS G523	Software for Embedded Systems	3 2 5
CS G524	Advanced Computer Architecture	5
CS G525	Advanced Computer Networks	5
CS G526	Advanced Algorithms and Complexity	5
CS G541	Pervasive Computing	4
CS G553	Reconfigurable Computing	5
CS G568	Network Security Project	0 3 3
CS G612	Fault Tolerant System Design	2 3 5
CS G623	Advanced Operating Systems	5
IS F462	Network Programming	3 0 3
SS G513	Network Security	3 1 4
SS G519	Social Media Analytics	3 1 4
SS G520	Advanced Data Mining	3 1 4
SS G527	Cloud Computing	5
SS G551	Advance Compilation Techniques	5
SS G552	Software Testing Methodologies	4
SS G554	Distributed Data Systems	3 2 5

Master of Business Administration

Core Courses

MBA G501	Managerial Economics	3
MBA G510	Human Resource Management	4
MBA G543	Leading Modern Organizations	3 0 3
MBA G544	Organizational Theory & Behaviour	3 0 3
MBA G545	Management Science	3 0 3
MBA G546	Business Statistics	3 0 3
MBA G547	Accounting for Managers	3 0 3
MBA G548	Strategic Marketing	3 0 3
MBA G549	Introduction to Systems & Sustainability	3 0 3
MBA G550	Critical and Design Thinking	3 0 3
MBA G557	Economic Environment of Business	3 0 3
MBA G558	Operations and Supply Chain Management	3 0 3
MBA G559	Corporate Finance	3 0 3
MBA G560	Marketing Research & Metrics	3 0 3
MBA G561	Business Analytics	3 0 3
MBA G564	Decision Making	3 0 3
MBA G565	Information & Knowledge Management Systems	3 0 3
MBA G566	Strategic Management	3 0 3
MBA G567	Technology Innovation & Entrepreneurship	3 0 3

MBA G568	International Business Strategy & Operations	3 0 3

Elective Courses
For Operations and Decision Sciences

MBA G512	Manufacturing Strategy	4
MBA G514	Technology Management	3 0 3
MBA G522	Total Quality Management	4
MBA G523	Project Management	4
MBA G525	R & D Management	3 0 3
MBA G539	Six Sigma	3 1 4
MBA G541	Operations Strategy	3 0 3
MBA G577	Supply Chain Analytics	3 1 4
MBA G579	Management Practice	3*
MBA G588	Services Management System	3 0 3

For Information Systems Management

MBA G527	e-Business and Internet Marketing	4
MBA G528	Internet Security and Cyber-laws	4
MBA G579	Management Practice	3*
MBA G581	Expert Systems	4
MBA G589	Enterprise Resource Planning	3 0 3
MBA G622	Software Project Management	4

For Finance

FIN F414	Financial Risk Analytics & Management	3 0 3
MBA G507	International Financial Markets & Services	3 0 3
MBA G508	Functions and Working of Stock Exchanges	3 0 3
MBA G509	Investment Banking and Financial Services	3 0 3
MBA G530	Project Appraisal	3 0 3
MBA G532	Risk Management and Insurance	3 0 3
MBA G536	Strategic Financial Management	3 0 3
MBA G537	Security Analysis and Portfolio Management	3 0 3
MBA G575	Financial Engineering	3 0 3
MBA G579	Management Practice	3*
MBA G593	Business Analysis and Valuation	3 0 3

For Marketing

MBA G533	Advertising and Sales Promotion	3 0 3
MBA G538	Marketing Models	3 0 3
MBA G540	Sports Marketing	3 0 3
MBA G542	Consumer Behaviour	3 0 3
MBA G562	Services Marketing	3 0 3
MBA G563	Industrial Marketing	3 0 3
MBA G574	Retail Management Systems	3 0 3
MBA G576	Digital Marketing	3 0 3
MBA G579	Management Practice	3*
MBA G583	Marketing Research	3 0 3
MBA G586	Product and Brand Management	3 0 3

For Organization Behavior and Human Resource Management

MBA G535	Cross Cultural Management	3 0 3
MBA G553	Organizational Change and Development	3 0 3
MBA G554	Innovative Leadership	3 0 3
MBA G555	International Human Resource Management	3 0 3
MBA G556	Performance Management	3 0 3
MBA G579	Management Practice	3*

For Strategy & Entrepreneurship

BITS F468	New Venture Creation	3 0 3
MBA G578	Game Theory and Business Strategy	3 0 3
MBA G579	Management Practice	3*
MBA G582	Creating and Leading Entrepreneurial Organization	3 0 3

Master in Public Health
Core Courses

BITS G515	Management Principles and Practices	4*
MPH G510	Biostatistics & Computers in Public Health	5
MPH G512	Environmental & Occupational Health	4
MPH G513	Public Health & Diseases	4
MPH G515	Communication in Health Care	4
MPH G521	Health Care Management	4
MPH G522	Preventive Nutrition & Health Promotion	4
MPH G523	Epidemic & Disaster Management	4
MPH G531	Health Economics & Financial Management	4
MPH G613	Health Systems and Society	2
MPH G661	Research Methodology I	5
MPH G692	Epidemiology	2

Elective Courses (any three)

BITS F467	Bioethics and Biosafety	3 0 3
MPH C431	Accounting & Finance	4
MPH G535	Family & Community Health Measures	3
MPH G537	Law & Ethics in Public Health	3
MPH G538	Telemedicine	3
MPH G539	Inter-sectoral co-ordination in Health Services	3
MPH G540	Role of Voluntary Bodies/NGO's in Public Health	3
MPH G665	Hospital Operations Management	3
MPH G681	Strategic Management	3

M. Phil. Chemistry
Core Courses

CHEM G551	Advanced Organic Chemistry	5*
CHEM G552	Advanced Inorganic Chemistry	5*
CHEM G553	Advanced Physical Chemistry	5*
CHEM G554	Physical Methods in Chemistry	5*
CHEM G555	Chemistry of Life Processes	5*

Elective Courses (any four)

BIO G513	Microbial and Fermentation Technology	5*
BITS G654	Advanced Instrumentation Techniques	5*
CHEM F412	Photochemistry and Laser Spectroscopy	3 0 3
CHEM F422	Statistical Thermodynamics	3 0 3
CHEM C431	Stereochemistry and Reaction Mechanism	3 0 3
CHEM G513	Advanced Nuclear and Radio Chemistry	5*
CHEM G521	Environmental Chemistry	5*
CHEM G531	Recent Advances in Chemistry	5*
CHEM G541	Chemical Applications of Group Theory	5*
CHEM G556	Catalysis	4*

CHEM G557	Solid Phase Synthesis and Combinatorial Chemistry	4*
CHEM G558	Electronic Structure Theory	5*
CHEM G559	Bioinorganic Chemistry	4*
CHEM G561	Heterocyclic Chemistry	5*
CHEM G562	Solid State Chemistry	4*
CHEM G563	Advanced Statistical Mechanics	5*
EEE F432	Medical Instrumentation	3 0 3
PHA G621	Advanced Medicinal Chemistry	2 3 5

DCA is empowered to add the following course as a deficiency course on case by case basis if the student is found to be deficient in Mathematics.

CHEM C453	Mathematics for Chemists	4*

* This is the total units and its break-up in terms of lectures and practical/seminars/project may be announced from time to time through the timetable.

M. Phil. in Liberal Studies

Core Courses

BITS E583	Case Study I	5
BITS G518	Writing Seminar	5
BITS G561T	Dissertation	16
BITS G661	Research Methodology I	5
HSS G511	Philosophical Foundations of Liberal Studies	5
HSS G512	Theoretical Approaches to Liberal Studies	5

Elective Courses

The 3 Electives will be fulfilled by taking one or more of the following courses or any other discipline course subject to approval by the department.

BITS E573	Study in Advanced Topics I	5
BITS E574	Study in Advanced Topics II	5
BITS E584	Case Studies II	4
BITS G565T	Dissertation	5

M.E. COMPUTER SCIENCE WITH SPECIALIZATION IN INFORMATION SECURITY WITH B.SC. INPUT

Core Courses

BITS F345	Information Law and Cyber Law	3 0 3
BITS F437	Technical Communication	3 0 3
BITS F463	Cryptography	3 0 3
BITS G540	Research Practice	4
CS F111	Computer Programming	3 1 4
CS F211	Data Structures & Algorithms	3 1 4
CS F212	Database Systems	3 1 4
CS F213	Object Oriented Programming	3 1 4
CS F215	Digital Design	3 1 4
CS F222	Discrete Structures for Computer Science	3 0 3
CS F301	Principles of Programming Languages	2 0 2
CS F303	Computer Networks	3 1 4
CS F342	Computer Architecture	3 1 4
CS F351	Theory of Computation	3 0 3
CS F364	Design and Analysis of Algorithms	3 0 3
CS F372	Operating Systems	3 0 3
CS F404	Computer Crime and Forensics	2 0 2
CS F406	Ethical Hacking	2 2 3
CS F468	Information Security Project	0 3 3
CS G517	Network & Systems Security	4
CS G524	Advanced Computer Architecture	3 0 5
CS G525	Advanced Computer Networks	3 2 5
CS G526	Advanced Algorithms and Complexity	3 2 5
CS G566	Secure Software Engineering	5
CS G568	Network Security Project	0 3 3
CS G623	Advanced Operating Systems	3 2 5
IS F242	Computer Organization	3 1 4
IS F341	Software Engineering	3 1 4
MATH F113	Probability and Statistics	3 0 3
MATH F212	Optimization	3 0 3
MATH F231	Number Theory	3 0 3
MGTS F211	Principles of Management	3 0 3

Elective Courses

CS F401	Multimedia Computing	3 0 3
CS F402	Computational Geometry	3 0 3
CS F407	Artificial Intelligence	3 0 3
CS F415	Data Mining	3 0 3
CS F441	Selected topics from Computer Science	3
CS F446	Data Storage Technologies & Networks	3 0 3
CS F451	Combinatorial Mathematics	3 0 3
CS G501	Mobile Computing	5
CS G514	Object Oriented analysis and Design	2 2 4
CS G527	Cloud computing	5
CS G557	Distributed Computing	5
CS G559	Database Security	5
CS G564	Advanced Cryptography	5
IS F322	Software Testing	2 1 3

M.E. Sanitation Science, Technology and Management

Core Courses

BITS G540	Research Practice	4*
SAN G511	Sanitation Technology	3 2 5
SAN G512	Sanitation and Public Health	3 2 5
SAN G513	Sanitation Governance, Behaviour change and Advocacy	5*
SAN G514	Sanitation financing and Project Management	5*
SAN G515	Emergency Sanitation & Leadership	5*

Elective Courses

BIO G525	Environmental Biotechnology & Waste Management	3 2 5
BITS G513	Study in Advanced Topics	5
CHE G513	Environmental Management System	3 2 5
MPH G510	Biostatistics & Computers in Public Health	5

In addition to above courses, the students will be required to register in the following courses as deficiency courses if they have not done it during their First Degree programme:

- BIO F216 Water, Sanitation and Solid Waste Management
- BIO F217 Laboratory for Water, Sanitation and Solid Waste Management
- CE F342 Water & Waste Water Treatment

LIST OF GENERAL/SPECIAL COURSES FOR M.PHIL. PROGRAMMES

BIO G511	Population and Quantitative Genetics	5
BIO G522	Interferon Technology	2 2 4
BIO G541	Neural Network Analysis	5
BIO G551	Membrane Biology	5
BITS G511	Advanced Project	5
BITS G513	Study in Advanced Topics	5
BITS G514	Environmental Health	3 0 3
BITS G644	Development and use of Computer Software	5
BITS G654	Advanced Instrumentation Techniques	5
CHEM G511	Nuclear and Radio Chemistry	5
CHEM G513	Advanced Nuclear and Radiochemistry	5
CHEM G521	Environmental Chemistry	5
CHEM G531	Recent Advances in Chemistry	5
CHEM G541	Chemical Applications of Group Theory	5
CHEM G551	Advanced Organic Chemistry	5
CHEM G552	Advanced Inorganic Chemistry	5
ECON G511	Dynamic Modelling and Control of National Economies	5
ECON G521	Modern Cost Engineering	5
ECON G531	Theory of Macroeconomic Policy	5
ECON G541	Economic Systems Analysis	5
ENGL G511	Growth of the English Language	5
ENGL G512	Language and S & T	5
ENGL G513	Social Impact of S & T	5
ENGL G521	Principles of Language Teaching	5
ENGL G522	Aesthetics and Technology	5
ENGL G531	Applied Linguistics	5
ENGL G541	Interpretation of Literature	5
ENGL G551	Information Technology Lab. I	5
ENGL G561	Information Technology Lab. II	5
ENGL G571	Applied Communication I	5
ENGL G581	Applied Communication II	5
ENGL G591	Project Formulation and Preparation	5
ENGL G611	Twentieth Century English Literature	5
ET G511	Science and Technology Dynamics	5
ET G521	Hi-Tech Management	5
ET G531	Systems Engineering	5
ET G541	Overview of Technology	5
HUM G511	Introduction to Health System	3 0 3
MATH G511	Design and Analysis of Algorithms	5
MATH G512	Selected Topics in Advanced Mathematics for Engineering Situations	5
MATH G521	Applied Functional Analysis	5
MATH G531	Number Theory	5
MATH G541	Advanced Methods in Discrete Mathematics	5
MATH G611	Algebraic Number Theory	5
MATH G612	Riemann Surfaces	5
MATH G621	Fibre Bundles	5
MATH G622	Algebraic Geometry	5
MATH G632	Lie Groups & Lie Algebras	5
MATH G642	Complex Manifolds	5
MGTS G511	Advanced Marketing Theories and Advertising	5
MGTS G521	Business Policy - Structure and Organization	5
MGTS G531	Recent Advances in Organization Behaviour Theory	5
MGTS G541	Management Information and Decision Support Systems	5
MGTS G551	Frontiers in Financial Management	5
MGTS G561	Institutional Finance & Project Appraisal	5
PHY G511	Theoretical Physics	5
PHY G521	Nuclear and Particle Physics	5
PHY G531	Selected Topics in Solid State Physics	5
PHY G541	Physics of Semiconductor Devices	5
SKILL G611	Computer Operation and Software Development I	5
SKILL G612	Computer Operation and Software Development II	5
SKILL G621	Computer Maintenance I	5
SKILL G622	Computer Maintenance II	5
SKILL G631	Professional Communication I	5
SKILL G632	Professional Communication II	5
SKILL G641	Modern Experimental Methods I	5
SKILL G642	Modern Experimental Methods II	5
SKILL G651	Techniques in Development Management I	5
SKILL G652	Techniques in Development Management II	5
SKILL G661	Research Methodology I	5
SKILL G662	Research Methodology II	5

All courses given above are unstructured. Actual structuring will be done from time to time.

COMMON COURSES FOR HIGHER DEGREES

BITS F437	Technical Communication	3 0 3
BITS G529	Research Project I	6
BITS G539	Research Project II	6
BITS G540	Research Practice	4
BITS G619	Professional Practice	4
BITS G620	Professional Practice I	3
BITS G621	Professional Practice II	3
BITS G629T	Dissertation	25(Max.)
BITS G639	Practice School	20
BITS G649	Reading Course	5

NOTE: Courses with 4 level numbers given above are advanced level electives from the offering of the Integrated First Degree programmes.

COMMON POOL OF ELECTIVES FOR HIGHER DEGREES

BITS G513	Study in Advanced Topics	5
BITS G649	Reading Course	5

NOTE: The courses from this pool will be available as electives to all higher degree students subject to approval from higher degree counseling committee.

REVISED CURRICULUM STRUCTURE FOR M.E. / M.PHARM. PROGRAMS

[This structure is applicable for students admitted in 2014 or after into the M.E. Chemical Engineering program including any specializations thereof.]

(a) General Structure of M.E. / M.Pharm. programs

Keeping in mind the increasing interest on behalf of the Departments to involve Higher Degree students in research and to provide options for students' interested in pursuing research, there is provision of certain flexibilities of pursuing Dissertation of duration between one semester and two semesters for these Higher Degree programs as illustrated below.

(i) Duration and Requirements to define a program

- Duration of the program: 4 semesters (2 years)
- Number of Credit Units: 64 (min).
- Coursework: 8 courses and 32 units (min)
- PS/Dissertation: 16 units (min) to 32 units: (max)

(ii) Structure

Prescribed coursework to meet the requirements of the program may not exceed 20 units per semester.

The program is structured primarily as a coursework track wherein the student pursues three semesters of coursework and pursues either a Practice School or a Dissertation for the entire last semester:

or alternatively, to enable a research track wherein the student pursues two semesters of coursework and starts his/her Dissertation in the third semester (possibly concurrent with coursework) and spends the entire fourth semester pursuing Dissertation.

The options are depicted below:

Track 1

Year	Semester I	Semester II
I	Coursework (4 or 5 courses -16 to 20 units)	Coursework (4 or 5 courses -16 to 20 units)
II	Coursework (4 or 5 courses -16 to 20 units)	BITS G639 Practice School (20 units) OR BITS G562T Dissertation (16 units)

Track 2

Year	Semester I	Semester II
I	Coursework (4 or 5 courses -16 to 20 units)	Coursework (4 or 5 courses - 16 to 20 units)
II	Coursework (2 courses - 7 to 9 units) AND BITS G564T Dissertation (9 units)	BITS G563T Dissertation (16 units)

Track 3

Year	Semester I	Semester II
I	Coursework (4 or 5 courses -16 to 20 units)	Coursework (4 or 5 courses - 16 to 20 units)
II	BITS G562T Dissertation (16 units)	BITS G563T Dissertation (16 units)

(Course Description for BITS G562/BITS G563/BITS G564 is the same as BITS G629T; BITS G562T or BITS G564T is a pre-requisite for BITS G563T).

(iii) Flexibilities and Constraints

In addition to the above requirements:

a) a student may be prescribed one or more deficiency courses;

b) a student may overload at most one course per semester when he/she is pursuing only coursework (i.e. no overload during dissertation semesters irrespective of whether he/she is pursuing concurrent coursework);

while this overloaded course need not be within the student's discipline but it will be subject to pre-requisites and operational conditions such as approval of the Heads of Department concerned.

In all, the workload per semester for a student may not exceed

i. 25 units when the student is pursuing only coursework but the limit may be relaxed for students who are prescribed deficiency courses.

ii. 19 units when the student is pursuing concurrent coursework and dissertation (so that the student may pursue 9 units of dissertation and 2 courses of at most 5 units each)

iii. 16 units when the student is pursuing full semester of dissertation

iv. 20 units when the student is pursuing full semester of Practice School.

Operational Aspects and Implementation

It is to be noted that the revised curriculum structure has been designed without prejudice to the existing programs i.e. given the existing structure and flexibilities of M.E./M.Pharm. programs all three tracks are operable.

The above structure will be made applicable for all students admitted to an M.E./M.Pharm program in 2014 or after under the proviso:

- for any new M.E. / M.Pharm. program starting from Academic Year 2014-15 all three tracks mentioned above will be enabled.

(b) Specializations within an M.E./M.Pharm. program

These programs are structured in such a way that a specialization can be obtained by a student:

- The coursework requirement proposed in the structure above can be categorized as follows:
  - Core: 6 courses / 30 units (max.)
  - Specialization **(if applicable)** : 3 courses / 12 units (min.) to 6 courses / 30 units (max.)
  - Some Specialization courses may be mandatory and some may be electives.
  - Total of Core and Specialization courses may not exceed 7 courses / 32 units.
  - A Research Practice or a Research Methodology course will be prescribed for all programs as part of the coursework requirement.
  - Rest of the coursework requirement may be obtained via other electives within the discipline but not necessarily within the specialization.

The name of the degree will be common (e.g. M.E. in Chemical Engineering) and only this will appear in the degree certificate whereas the name of the specialization will be mentioned only in the transcript.

(c) Structure of M.E. (Chemical Engineering) and specializations within

(i) Structure of M.E. (Chemical Engineering)

Year	Semester I	U	Semester II	U
I	CHE G622 Advanced Chemical Engineering Thermodynamics	5	CHE G641 Reaction Engineering	5
	CHE G523 Mathematical Methods in Chemical Engineering	5	CHE G552 Advanced Transport Phenomena	5
	Elective I	*	BITS G661 Research Methodology I	5
	Elective II	*	Elective III	*
	Total	16 (min)	**Total**	16 (min)
	Semester III		**Semester IV**	
II	Elective IV to Elective VII	16 (min)	PS / Dissertation	16/20
	OR Elective IV AND Elective V AND Dissertation (9 units)	16 (min)		
	OR Dissertation (16 units)	16		
	Total	**16(min)**	**Total**	**16/20**

Structure of M.E. (Chemical Engineering) – Specialization in Nuclear Engineering

The structure of M.E. (Chemical Engineering) with specialization in Nuclear Engineering will be the same as the chart given above for M.E. (Chemical Engineering) with the added constraint that at least 3 electives should be from the pool of Specialization electives for Nuclear Engineering (given below).

Pool of Specialization Electives for Nuclear Engineering

Course No.	Course Title	Units		
		L	P	U
CHE G559	Reactor Physics and Engineering			5
CHE G560	Nuclear Fuel Cycle and Waste Management			5
CHE G561	Nuclear Reactor Control and Instrumentation			4
CHE G562	Thermal Hydraulics and Heat Transfer			4
CHE G563	Nuclear Chemical Engineering			4
CHE G564	Nuclear Materials and Radiation Damage			4
CHE G565	Radiation and Radio Isotopes Applications			4
CHE G566	Nuclear Safety, Security and Safeguards			4

Structure of M.E. (Chemical Engineering) – Specialization in Petroleum Engineering

The structure of M.E. (Chemical Engineering) with specialization in Petroleum Engineering will be the same as the chart given above for M.E. (Chemical Engineering) with the added constraint that at least 3 electives should be from the pool of Specialization electives for Petroleum Engineering (given below).

Pool of Specialization Electives for Petroleum Engineering

Course No.	Course Title	Units		
		L	P	U
CHE G533	Petroleum Product Characterization	3	2	5
CHE G567	Natural Gas Processing			4
CHE G568	Modeling and Simulation in Petroleum Refining			4
CHE G569	Petroleum Production Economics			4
CHE G616	Petroleum Reservoir Engg.			5
CHE G617	Petroleum Refinery Engineering			5
CHE G618	Petroleum Downstream Engg.			5

Ph.D. PROGRAMME

Structure

1. Course Work

The various categories of courses, for the whole possible range of input of Ph.D. students are described in the Academic Regulations. In most cases, this course work would consist of courses which are required to be completed for a higher degree programme of the Institute. Departures from these normal situations are described in the Academic Regulations.

2. Ph.D. Qualifying Examination

Every student admitted to Ph.D. must pass the qualifying examination which is based on two areas chosen by the candidate depending on his intended area of research and courses done. The qualifying examination tests the student's knowledge, grasp of fundamentals and his ability to use them in unknown situations.

3. Foreign Language when required

The foreign language will be prescribed as an eligibility requirement for the Ph.D. only when the supervisor and/or the Academic-Graduate Studies and Research Division (AGSRD) have made recommendations for the same justifying its need for the particular topic of research and the literature available and this recommendation has been accepted by the Research Board. Otherwise English or an Indian language, as the case may be, would suffice the requirement of the foreign language.

4. Teaching Practice/Practice Lecture Series/ Research Methodology

BITS C791T	Teaching Practice I	1
BITS G661	Research Methodology I	1

The above two separate and independent courses, to be taken one at a time, are designed and operated to provide cumulative experience for a Ph.D. student in the practice of teaching.

BITS E793T	Practice Lecture Series I	1

This course is in lieu of the Teaching Practice I and designed and operated to provide cumulative experience for a Ph.D. student in the Practice of teaching in his own professional setting where it is not feasible to operate the teaching practice courses. The student will deliver a predetermined series of technical talks before a professional audience as approved by Dean (AGSRD)

5. Seminar/Independent Study

1. BITS C797T Ph.D. Seminar (Min) 2

   While the total minimum number of units is 2, registration is done for one unit in each semester/term until the submission of the thesis.

2. BITS C790T Independent Study (Min) 2

   A student may be asked to register in this course in lieu of BITS C797T by Dean, AGSRD if situation so warrants. While the total number of units is 2, registration is done for one unit in each semester/term until the submission of the thesis.

6. Thesis

BITS C799T Ph.D. Thesis (Min) 40

While the total minimum units assigned to this course are 40, the distribution of the units between different semesters/terms would be determined by the, AGSRD

7. General

The `Doctoral Counselling Committee (DCC)' monitors the academic progress of Ph.D. students similar to the monitoring of academic progress of students of integrated First Degree and Higher Degree programmes by the ACB. The decisions of the DCC are reported to the Research Board and the Senate.

A Doctoral Advisory Committee (DAC) is appointed by the DRC for each candidate admitted to the Ph.D. programme. This committee consists of at least two faculty members from the broad area in which the candidate opts to pursue the Ph.D

Ph.D. Aspirants Scheme for Professionals

This programme enables experienced personnel and professionals working in industries and R&D organizations that collaborate with BITS to work for a Ph.D. degree of the Institute in their respective work environment. This makes it possible for practicing professionals to be offered the same challenges that are traditionally offered to teachers in universities. Candidates, sponsored by their organizations, work for the Ph.D. degree without any dislocation from their work environment on research problems relevant to their organizations.

Admission to this programme is done through what is known as Ph.D. Aspirants Scheme. Ph.D. Aspirants will be first asked to write the qualifying examination. The Ph.D. qualifying examination is based on two areas chosen by the candidate depending on his intended area of research and courses done. The institute recognizes that there may be professionals who might not possess a degree equivalent to a higher degree of the institute, but has gained knowledge and skills through experience (substantiated by documentary evidence), which could be treated as equivalent to one of the higher degrees of the institute. For convenience of operation, for these cases, the institute has devised a higher degree programme called M.Phil (Applied). A list of courses for M.Phil.(Applied) is given below, from which a minimum number of 8 courses are to be chosen.

M.Phil. (Applied)

BITS E511	Computer Applications I	4
BITS E512	Computer Applications II	4
BITS E521	Technical Communication I	4
BITS E522	Technical Communication II	4
BITS E531	Social, Behavioral & Economic Sciences I	4
BITS E532	Social Behavioral & Economic Sciences II	4
BITS E533	Modern Experimental Techniques-I	4
BITS E534	Modern Experimental Techniques-II	4
BITS E535	Management Methods & Techniques I	4
BITS E536	Management Methods & Techniques II	4
BITS E537	Systems Sciences and Engineering I	4
BITS E538	Systems Science and Engineering II	4
BITS E541	Chemical and Life Science I	4
BITS E542	Chemical and Life Science II	4
BITS E543	Instrumentation Engineering I	4
BITS E544	Instrumentation Engineering II	4
BITS E545	Project and Consultancy I	4
BITS E546	Project and Consultancy II	4
BITS E547	Public Administration I	4
BITS E548	Public Administration II	4
BITS E551	Physical and Mathematical Sciences I	4
BITS E552	Physical and Mathematical Sciences II	4
BITS E561	Use of English for Professional Purposes I	4
BITS E562	Use of Eng. for Professional Purposes II	4
BITS E571	Methods of Planning and Development I	4
BITS E572	Methods of Planning and Development II	4
BITS E573	Study in Advanced Topics I	5
BITS E574	Study in Advanced Topics II	5
BITS E583	Case Studies I	4
BITS E584	Case Studies II	4
BITS E591	Science and Technology Development I	4
BITS E592	Science and Technology Development II	4
BITS E593	Reading Course I	5
BITS E594	Reading Course II	5
BITS E611	Internship I	20
BITS E612	Internship II	20
BITS E661	Research Methodology I	5
BITS E662	Research Methodology II	5

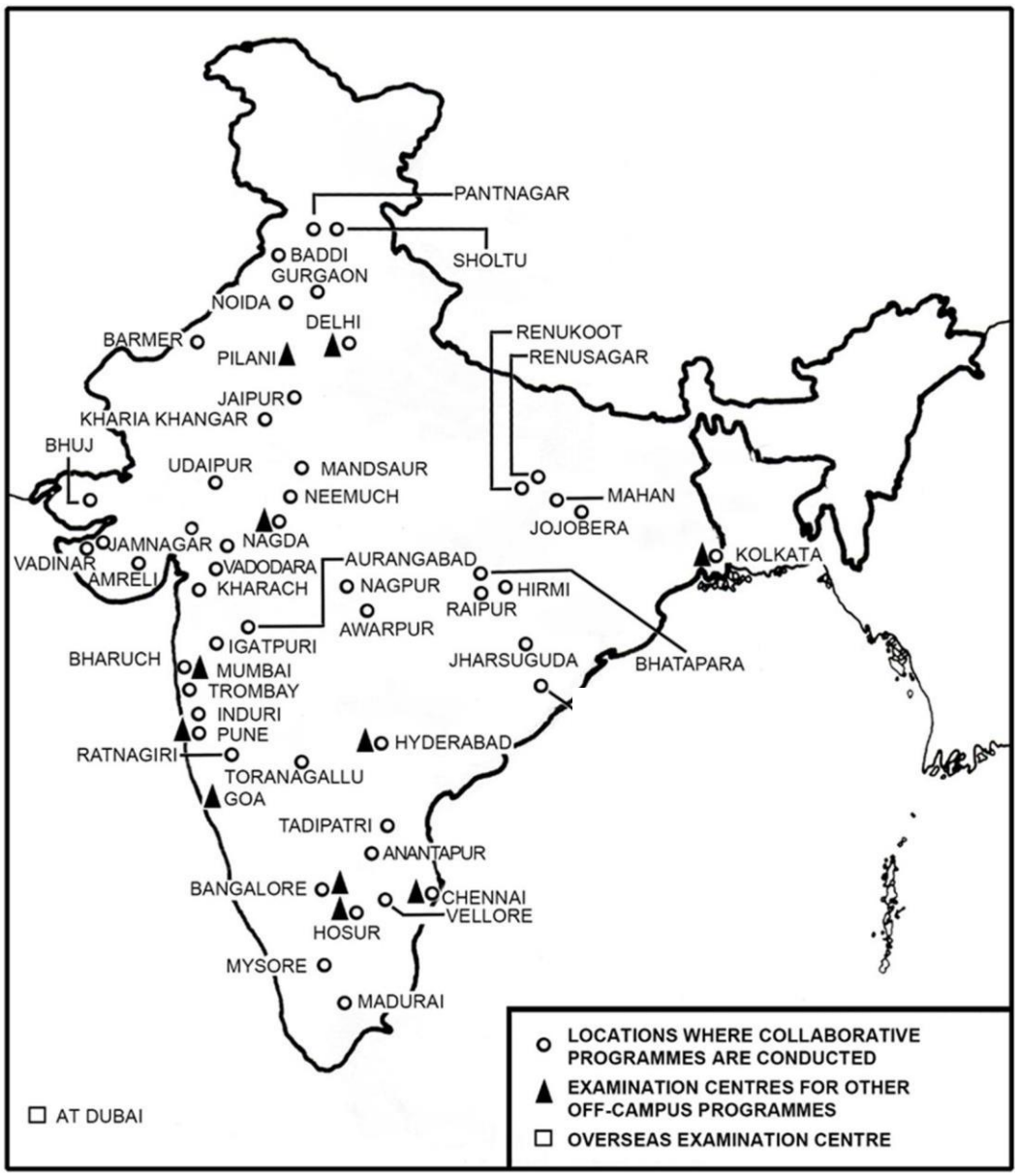
Note: No direct admission to M.Phil.(Applied) will be done. Courses described above will be used for students admitted to the Ph.D. programmes under the Ph.D. Aspirant Scheme.

PART V

WORK INTEGRATED LEARNING PROGRAMMES

MAP OF BITS WORK-INTEGRATED LEARNING & COLLABORATIVE PROGRAMMES

2021-2022



Introduction

Since 1979, the Institute has been participating in the human resources development activities of the industries by evolving several degree programmes that integrate the working environment of the employees with the learning environment required by the Institute. These programmes are offered in several domains like Information Technology, Engineering Technology and Management.

The Institute conducts **Work Integrated Learning Programmes (WILP)** as a means of continuing education for employed professionals to meet the Learning & Development needs of a diverse spectrum of industries. These programmes are a conducted through a collaborative arrangement between BITS Pilani and the collaborating organization / industry, whose ultimate aim is to build competencies and to attain advancement of technical workplace skills.

Salient Features of WILP

For the conduct of Work Integrated Learning programmes, the basic requirement is the participation of the collaborative organizations. Such a collaboration includes extending physical and other facilities and by agreeing to integrate their work requirements with the academic requirements of the Institute for the pursuit of the programme. The WILP Division of the Institute operates these programmes.

The Work Integrated Learning Programmes are offered in two modes: Programmes that are designed to meet exclusive requirements of specific collaborating organizations are offered as Enterprise Education Solutions for sponsored employees, with classes organized in the premises of the collaborating organizations. Programmes designed to meet the generic industry requirements are offered as Programmes for Individual students from various organizations. Instruction in such programmes is typically delivered through technology.

The Work Integrated Learning Programmes are characterized by the following salient features:

1. Enrollment is permitted only to suitably qualified, employed professionals having specified educational qualifications, with adequate and relevant work experience, to programmes that are closely aligned with their work profiles.
2. Enrollment also requires endorsement of the employer, and a commitment from the employer to provide necessary support (including that of a qualified mentor) and facilities to enable effective work integrated learning. The rationale for permitting only qualified employed professionals to enroll under WILP alongwith the consent from the employer is with the objective that the skill and knowledge enhancement attained by the employee through these WILP would ultimately benefit, add value to the organization and increase productivity.
3. A judicious combination of synchronous and asynchronous modes of instruction is used, for regular and effective interaction between the students and faculty members, to maintain the necessary academic rigor and standards of instruction.
4. WILP are characterized by person-centered approach with the same rigor and standards at par with the on-campus system of education. There is no replacement of inter-personal communication of conventional classroom based education, since all courses are conducted in a manner akin to actual classroom teaching ensuring two-way communication between experienced faculty of BITS and the students.

5. The pedagogy of WILP is based on the successful and established methodologies followed by BITS for on-campus education system without compromising on the duration of the programme, methodology of study, assessment and programme completion requirements which are comparable to programmes offered on-campus. All the programmes under WILP follow a credit-based system at par with the on-campus education system.

6. For each WILP course there is an instructor who is a BITS faculty responsible for the conduct of the course, as well as a qualified mentor (being a senior professional from the student's own organization who agrees to act as a mentor and a resource person) at the work place to provide structured guidance to the employee throughout the duration of the programme, which helps in strengthening the work-study integration.

7. All programmes are designed to meet the industry needs, and hence require application of concepts learnt in the classroom. Therefore, the Institute provides several technology enabled tools like simulators, virtual labs and remote labs to enable experiential learning. Such labs are equipped with contemporary computational simulators and remote operating equipment. Students spend sufficient time in learning, practicing and experimenting industry oriented problems designed and developed by BITS faculty in collaboration with industry experts.

The currently operative programmes are given in Table on pages V-4to V-6. The curriculum structure and semesterwise pattern of courses for the currently operative programmes are given on Pages V-13& V-105.

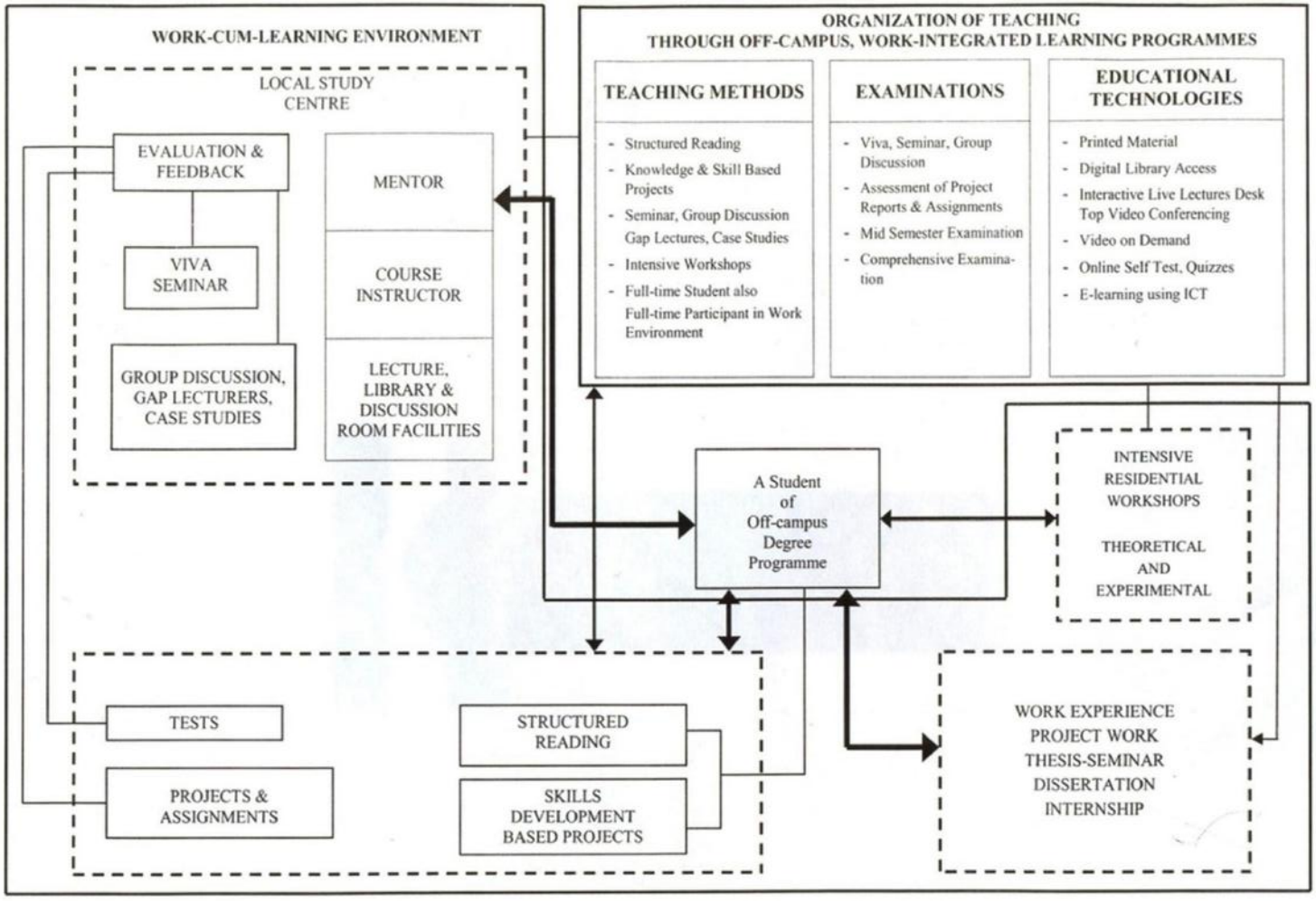


Figure 1: Person-centred Approach in the Off-campus Work-Integrated Learning Programme

Table: Currently Operative Work-Integrated-Learning Programmes at a Glance

Programmes		Collaborating / Sponsoring Organization
B.Tech. Programmes		
1. Engineering Design	-	Designed for the HRD needs of a diverse spectrum of Engineering Industries
2. Engineering Technology	-	Designed for the HRD needs of a diverse spectrum of Engineering Industries and John Deere, Pune
3. Information Systems	-	Designed for the HRD needs of a diverse spectrum of IT Industries and Wipro Bangalore
4. Manufacturing Technology	-	Kirloskar Oil Engines, Kolhapur, Bharat Forge, Pune, Tata Motors, Jamshedpur; TACO, Pune; Maruti Suzuki, Gurgaon; Mahindra Motor Vehicles; Cummins, Pune; GE Locomotives
5. Power Engineering	-	Aditya Birla Group, Tata Power, JSW Energy – Mumbai
6. Process Engineering	-	Aditya Birla Group, Mumbai; JSW Steel, Toranagallu; Vedanta, Jharsuguda; BPCL, Mumbai
M.Sc. Programmes		
1. Business Analytics	-	Designed for the HRD needs of a diverse spectrum of IT Industries
2. Information Systems	-	Designed for the HRD needs of a diverse spectrum of IT Industries
B.Sc. Programme		
1. Design & Computing	-	Designed for the HRD needs of a diverse spectrum of IT Industries, and HCL Technologies, Noida
2. Pharmaceutical Sciences	-	Designed for the HRD needs of a diverse spectrum of Pharmaceutical Industries, and Dr. Reddy's Laboratories, Hyderabad
3. Engineering Science	-	Designed for the HRD needs of a diverse spectrum of Manufacturing, Mechanical, Chemical, and circuits Industries
M.Tech. Programmes		
1. Automotive Electronics	-	Designed for the HRD needs of a diverse spectrum of Automotive Industries and Aptive
2. Automotive Engineering	-	Designed for the HRD needs of a diverse spectrum of Automotive Industries, Tata Technologies, Tata Motors, Pune; Mercedes Benz; Cummins
3. Computing Systems & Infrastructure	-	Designed for the HRD needs of a diverse spectrum of IT Industries, and Wipro, Bangalore, VMware
4. Data Science & Engineering	-	Designed for the HRD requirements of a diverse spectrum of IT Industries and Intuit; Avaya; BEL; Wipro Technologies
5. Design Engineering	-	Designed for the HRD needs of a diverse spectrum of Engineering Industries, SKF and John Deere, Pune
6. Digital Manufacturing	-	Designed for the HRD needs of a diverse spectrum of Digital Industries

Programmes	Collaborating / Sponsoring Organization
7. Embedded Systems	- Designed for the HRD needs of a diverse spectrum of IT Industries, Aricent Technologies; Cisco, Bangalore; UTC Bangalore and Hyderabad.
8. Environmental Engineering	- Goa State Pollution Control Board, Goa
9. Manufacturing Management	- Designed for the HRD needs of a diverse spectrum of Engineering Industries
10. Microelectronics	- Designed for the HRD needs of a diverse spectrum of IT Industries; Synopsys, Bangalore; Samsung, Gurgaon; Aricent Technologies
11. Pharmaceutical Operations and Management	- Designed for the HRD needs of a diverse spectrum of Pharmaceutical Industries, and Sun Pharmaceutical Industries, Vadodara;Lupin, Mumbai
12. Quality Management	- Designed for the HRD needs of a diverse spectrum of Engineering Industries
13. Sanitation Science, Technology and Management	- Designed for the HRD needs of a diverse spectrum of Engineering Industries
14. Software Engineering	- Wipro Technologies, Dell,SAP Labs, Sabre,EMC, Oracle, Lowe's Services, Bangalore; Avaya, Tech Mahindra, Pune; Capgemini; Qualcomm, Hyderabad
15. Software Systems	- Designed for the HRD requirements of a diverse spectrum of IT Industries; Wipro Technologies, Bangalore; TCS, Hyderabad;Cisco, Synopsys, Bangalore; Samsung, Gurgaon; Aricent Technologies, Mercedes-Benz, Bangalore; ATMECS
16. Systems Engineering	- Wipro Infotech, Bangalore

M.B.A. Programmes	
1. Business Analytics	- Designed for the HRD needs of a diverse spectrum of IT Industries
2. Consultancy Management	- Designed for the HRD needs of a diverse spectrum of consulting firms
3. Finance	- Designed for the HRD needs of business organizations
4. FinTech	- Designed for the HRD needs of business organizations
5. Hospital and Health Systems Management	- Designed for the HRD needs of a diverse spectrum of Hospitals and Healthcare organizations
6. Manufacturing Management	- Designed for the HRD needs of a diverse spectrum of Engineering Industries and Bosch
7. Quality Management	- Designed for the HRD needs of a diverse spectrum of Engineering Industries

Post Graduate Diploma Programmes		
1. Business Analytics		Designed for the HRD needs of a diverse spectrum of IT Industries
2. Finance		Designed for the HRD needs of a diverse spectrum of business organizations
3. FinTech		Designed for the HRD needs of business organizations
2.Manufacturing Management	-	Designed for the HRD needs of a diverse spectrum of Manufacturing organizations
Post Graduate Certificate Programmes		
1. Artificial Intelligence and Machine Learning	-	Designed for the HRD needs of a diverse spectrum of IT industries
2. Big Data & Analytics	-	Designed for the HRD needs of a diverse spectrum of IT industries
3. Big Data Engineering	-	Designed for the HRD needs of a diverse spectrum of IT industries
4. Full Stack Engineering		Designed for the HRD needs of a diverse spectrum of IT industries
5. General Management	-	Designed for the HRD needs of a diverse spectrum of Engineering industries
6. Internet of Things	-	Designed for the HRD needs of a diverse spectrum of IT industries
7. Manufacturing Practice	-	Designed for the HRD needs of a diverse spectrum of Manufacturing organizations
8. Non-sewered Sanitation	-	Designed for the HRD needs of a diverse spectrum of Engineering industries
Certificate Programmes		
1. Manufacturing Practice	-	Designed for the HRD needs of a diverse spectrum of Manufacturing organizations
2. General Management	-	Designed for the HRD needs of a diverse spectrum of Engineering industries

Note: The Institute looks for the viable minimum number (around 50) of candidates sponsored by an organization or a group of organizations in any centre for a degree programme. Any organization interested in having a dialogue with the Institute for offering any collaborative and innovative programme directed towards the human resource development needs of their industry may write to the Institute. The Institute has an open mind to offer any of the existing programmes or devise any other new programme.

Admission Modality

1. The Institute is one of the very few universities in India, which has ventured into work integrated learning programmes in science and technology areas. In order to maintain the standard as well as rigour required in these areas, the Institute could cater only to those inputs, which have the facilities and environment for such a learning process. So the Institute treats these degree programmes as continuing technical education programmes for employed professionals. Hence admissions are given normally to candidates who are already employed in relevant professional domains and whose employing organizations sponsor them in their academic pursuit subject to the candidates having the required academic qualifications and relevant work experience. The Institute looks for candidates who have the necessary computer, laboratory and other physical facilities including access to Email and Internet, as well as certain intellectual input in terms of guidance by superior / co-officer / professional expert preferably from the workplace of the candidate who will be termed as Mentor, while the candidate is in pursuit of studies.

II. These degree programmes are work-integrated learning programmes. Hence, for students to get admission to these programmes, they must be engaged in work in the relevant professional areas. The final offer of admission would be based on candidate's educational background, academic achievements, work profile, relevant work experience, profile of the employing organization and Mentor's profile.

III. If the number of applications for a particular programme is less than a critical number, that programme may not be offered in that semester.

IV. Once the candidate accepts the admission offer and confirms registration, any request for deferment of admission to a subsequent semester cannot be entertained. The candidate can only withdraw from the registered semester.

Fees Structure

The fees schedule applicable for all programmes is as follows:

Admission Fees : Rs. 16,500/-

Each Semester Fees : Rs. 57,750/-

A candidate who has been offered admission will have to pay Rs. 71,500/- (Admission fees and Semester fees for the Starting Semester of the programme) immediately on receiving the Admit Offer Letter. Any candidate who desires to discontinue from the programme after confirmation of admission & registration for the courses specified in the admit offer letter will forfeit the total amount of fees paid.

Note 1: Certain specific facilities such as access to a digital library or virtual laboratories, if provided, may be charged extra in addition to the above mentioned fees.

Note 2: For the examination centre at Dubai, in addition to the semester fees, for each semester there will be an examination centre fees of 1000 UAE Dirhams or equivalent per semester out of which 500 UAE Dirhams is to be paid at the time of appearing in Mid-semester Tests at Dubai exam centre for that semester, and the remaining 500 UAE Dirhams is to be paid at the time of appearing in Comprehensive Examinations at Dubai exam centre for that semester.

Educational Process

The education in the work integrated learning programmes is characterized by person-centered approach where the rigour and standards are maintained on par with Institute's system of education on-campus. These programmes judiciously combine the flexibility and ingenuity of the continuing education system with the regular features of the on-campus education system. Also, the learning and evaluation process draws upon the successful and established methodologies followed by the Institute.

The work integrated learning environment of a student consists of two broad-based facets:

1. Academic Environment created by BITS faculty drawn from different disciplines.

2. Student's own Work Environment from which assignments, projects, seminars etc., may emerge to integrate theory and practice. A (locally-based) Mentor imparts structured guidance and conducts certain evaluation components (see Role of Mentor' below).

Central to the educational philosophy of the Institute being the dialectical link between theory and practice, the student's own work environment provides an ideal ground where theory could be meaningfully combined with practice through Assignments, Case Studies, Laboratory-Oriented Projects, Work Experience, In-service Training, Internship, Thesis-Seminar, Project Work and Dissertation. These evaluation components and courses search for evidence of self-study, time planning, conceptual understanding & application of the concepts in a real-life situation, self-reliant articulation, enthusiasm for, awareness of and participation in new pedagogy. One of the distinctive features of this system is the complete formalization of pursuit of education at the work-learning environment. An organization creates a work learning environment by providing academic sponsorship for the candidates as well as infrastructural facilities such as place for conducting formal classes / mentor interactions / examination apart from library, computer and laboratory access. The work learning environment form a strict requirement in order to infuse a strong component of teacher-student contact through course instructors as well as Mentor (a senior officer of the student's own organization). Thus work-learning environment is a very important component of the person-centered learning process. There is in the design, a clear arrangement of periodic personal discussion in the work-learning environment with the students so that their progress is directly monitored by planned interaction. Further, the students at the work-learning environment receive help from mentors. Throughout the student's learning process, which is conducted in his own work place, through systematic self-study, and self-learning process, the student remains continually in contact with the course instructors for any clarifications. Thus the operation is an imaginative combination of the contact hours and tutoring of the on-campus system with the student-centered self-study feature of the off-campus system and an organizational and pedagogic commitment of the collaborating organizations. The student is at once, a full-time student as well as full-time employee.

Work Integrated Learning: For each course offered by the Institute, there would be an Instructor, who is a BITS faculty, drawn from the relevant discipline. He is charged with the responsibility of the conduct of that course. This will be in terms of preparing question papers, evaluation of answer papers and answering student's queries. He will also prepare instruction manuals, question bank, supplementary notes, etc. wherever required in order to strengthen the course.

For each course, there will be a handout, which will spell out the plan of study and evaluation scheme, apart from other details. The evaluation schedule is also announced in the beginning of the semester itself. All details pertaining to the operation of the course including study plan are shared with the students through this document.

The BITS, Pilani model of cooperative education has a structured method of integrating education with practical work experience, faculty-student interaction as well as mentor-employer involvement. Further, the BITS model of education deploys ICT both in synchronous and asynchronous modes. Synchronous instruction through Internet based desktop video conferencing enables effective interaction between students and faculty. Asynchronous instruction, including on-demand lectures and electronic mail through list servers, is more flexible as it accommodates multiple learning levels and schedules. In addition, intensive residential contact classes are held for various programmes at the Institute campus as well as at the locations of various organizations. Thus, the BITS, Pilani model emphasizes on acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies, in the work-integrated learning environment.

The Role of a Mentor: A Mentor is a senior officer of the student-employee who has been nominated by his employing organization or is a person in a senior position willing to undertake and discharge the academic responsibilities on his own volition. It is expected of the Mentor to

possess adequate qualifications to guide the student. Typically for the B.Tech. / M.Sc. programmes, the mentor is expected to have minimum educational qualification of the level of Integrated First Degree of BITS or its equivalent such as B.E./ B.Tech. / B.S. / M.Sc. / A.M.I.E.,and for the M.B.A. / M.Tech. programmes the mentor is expected to have a minimum educational qualification of the level of Higher Degree of BITS or its equivalent such as M.E. / M.Tech. / M.S / M.Phil.

The Mentors would assist the course instructors in terms of the following:

b) Achieving the set of academic objectives specified by the instructors;

c) Verifying if a student is indeed adhering to the plan of study given in the handout;

d) Monitoring involvement of the student in self-study, time planning, understanding of concepts and their use, developing self-reliant articulation, awareness of and enthusiasm for new pedagogy, responsibility to meet deadlines, develops familiarity with the library, etc.

e) Conducting certain evaluation components like Seminars, Assignments, Case Studies and Projects.

Additional features include:

(a) Courseware (pre-recorded digital content) developed by BITS faculty for certain courses.

(b) Course Handouts which provide a detailed plan of study, evaluation scheme, and experiential learning components. ***It is the responsibility of each student to acquire textbooks and other reference materials recommended for each course.***

(c) Curricula designed on S&T approach for modernizing the workbench by purposeful acquisition of scientific methods and modern skills.

(d) Intensive contact sessions (where required) conducted at any of the BITS campuses or at the collaborating organizations. The contact sessions could include one or more of the following:

- Special Lectures
- Field, Library and Laboratory work
- Projects
- Tutorials
- Case discussions
- Seminars
- Social activities.

Evaluation Methodology

Evaluation for a given course is internal and continuous and has the following features:

- Quizzes, Assignments, Projects, Case Studies, spread over a semester for making the course relevant and meaningful to the work learning environment of the students;
- Written examinations – one at the mid-semester point and acomprehensive examination at the end of semester. These examinations are conducted at specified exam centres of BITS in a centralized manner under the supervision of BITS faculty.
- For programmes offered for individuals, the Institute presently has examination centres at Bangalore, Chennai, Coimbatore, Delhi, Goa, Hyderabad, Kolkata, Mumbai, Pilani and Pune in India, and at Dubai in UAE.
- Strict adherence to the evaluation schedule as announced through the course handout at the start of the semester.
- The Institute follows continuous system of internal evaluation and letter grades A, A-, B, B-, C, C-, D, E carrying grade points 10, 9, 8, 7, 6, 5, 4, 2 respectively are awarded for all courses other than Dissertation / Project Work / Project for which only non-letter grades namely EXCELLENT, GOOD, FAIR, POOR are awarded. If a student does not offer adequate opportunity for evaluation in a course, reports such as RRA (Require to Register Again) may be awarded.
- The final grading in a course is done by tabulating in descending order (equivalently a histogram) the total marks of all students in a particular course. The performance of the course will be analyzed in terms of average, highest and lowest marks and dividing lines

between various clusters. Gaps between clusters and the nature of clusters will guide drawing the dividing lines between various grades. In a normal class of large size, the C-band will usually include the average mark. This is not a hard and fast rule and exceptions may arise in cases of small classes or a skewed histogram etc.

- The Cumulative Grade Point Average (CGPA) on a 10 Scale basis is used to describe the overall performance of a student in all courses for which LETTER GRADES are awarded.

$$CGPA = \frac{U_1G_1 + U_2G_2 + U_3G_3 + ... + U_nG_n}{U_1 + U_2 + U_3 + ... + U_n}$$

Where U_1, U_2, U_3, … U_n denote units associated with the courses taken by the student and G_1, G_2, G_3,…G_n denote grade points of the letter grades awarded in the respective courses. Non-Letter grades do not go into computation of CGPA.

- In the case of Integrated First Degree programmes the final division for the degree is decided on the basis of CGPA and there are three classifications, namely Distinction (CGPA 9.00 or more), First Division (CGPA 7.00 or more but less than 9.00) and Second Division (CGPA 4.50 or more but less than 7.00). However, no Division will be awarded in diploma, higher degrees and Ph.D. programmes.
- Subject to fulfilling the Academic Regulations of the Institute, the student will be issued at the end of each semester a grade sheet and at the end of the programme a Transcript and Provisional Certificate followed by the Final Degree Certificate. The grade sheet / transcript – provisional certificate will be withheld when a student has not paid his dues or when there is a pending case of breach of discipline or a case of unfair means against him.
- The minimum academic requirements for higher degreeprogrammes stipulate that a student obtains a CGPA of 5.50 and no E grade in any course. For the Integrated First Degree programmes such as B.S. and B.Tech. programmes, a student should obtain a CGPA of 4.50 and no E grade in any course. Students who fail to meet the minimum academic requirements are placed under the purview of Academic Monitoring Board (AMB), which monitors their progress, and gives guidance so that they are properly rehabilitated at the earliest.
- The Institute's Academic Regulations must be consulted for additional details.

Some Stipulations

(a) All degrees offered through Work Integrated Learning Programmes are equivalent to the corresponding degreesoffered on-campus, and for admissions to any higher degree programme of the Institute, these degrees will not be distinguished from on-campus degrees.

(b) In any examination, as far as possible, the direct interactive process of the evaluation would be made at a place nearest to the work location of the candidates. Wherever there is not adequate number of candidates, the Institute will be free to demand that all candidates come to one of the campuses or other examination centers for this purpose.

(c) In case of organization specific collaborative programmes, a student who is admitted to the Institute because of sponsorship from an organization will cease to be a student if he discontinues employment from the organization. In case of other programmes, the student may be allowed to continue if the new organization in which he is employed agrees to sponsor him for the degree and if the work integrated learning environment is relevant to the degree programme. However, if the person becomes unemployed he may not be continued because of the requirement of work integrated learning environment for the degree, which may no longer be available to the student.

(d) Any student admitted to a programme may be allowed to transfer to another programme provided he is eligible for the same and is supported by his work environment and sponsorship of his employer.

(e) Since every student admitted to work integrated learning programme is treated as a full-time student and a full time employee, it is essential that such a student be not enrolled for any degree or diploma programme, part-time or otherwise, in any

other university. If it is found that a student is admitted / registered in some other university for degree programme, then his admission / registration will be cancelled.

Operating Definitions of Certain Key Terms

1. A course is a component of knowledge, which serves as the irreducible minimum building block in the curriculum or syllabus.

2. A programme of studies is a set of courses constituting the requirements of a degree.

3. A regular student is one who is enrolled for a degree programme.

4. A collaborating organization is an organization that helps the Institute in setting up the necessary facilities and in the running of classes and laboratories for all students. Such an organization may simultaneously be also a sponsoring organization.

5. A sponsoring organization is an organization, which fulfills one or more of the following features:

   a) The organization is the employer of the student and pays fully / partly the fees/dues of the student and also provides facilities required for the learning process.

   b) The organization is an employer of the student but does not pay the fees/dues of the student. Nonetheless the organization agrees to encourage and actively participate in the special nature of the educational process for the mutual benefit of the organization and the employee.

6. An Associate Student is one who is allowed to register in any of the courses offered in each semester with an ultimate goal of obtaining a diploma/degree or without any such ambition. The treatment of these students will be different from that of the casual students in that these students will be registered on credit and not on audit basis and may be admitted for a degree or a diploma, if situation so warrants. Further, admission procedure and the fee structure may also differ in contrast to the casual students. Presently the Institute considers only sponsored candidates from structured collaborative programmes for admission as Associate Student.

Duration: This may vary from programme to programme depending upon the input qualification, experience, nature as well as the need of the collaborating organizations including the viability and feasibility of course offerings.

The curriculum details of programmes and semesterwise pattern of courses given in the following pages indicate the currently operational details for various programmes, which are subject to change if the situation warrants.

B. Tech. Programmes

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics, and having minimum two years work experience in relevant domains.

Curriculum requirements: Completion of the **B.Tech.** degree would require completion of coursework of minimum 24 courses (84 units minimum) and one Project Work (16 units minimum), adding up to a total of 100 units (minimum).

Nominal duration: The nominal duration of truncated B.Tech. programs will be 7 semesters.

Curriculum Structure for B.Tech.programs for working professionals:

Category	**Number of Courses Required**	**Number of Units Required**
I Foundation Courses	5-10	15-40
II Discipline Courses		
Discipline Core	8-12	26-48
Discipline Electives	3-9	9-36
Coursework Sub-Total	**24 courses (min)**	**84 units (min)**
III Project Work#	1	16
Total	**25 courses (min)**	**100 units (min)**

#Note: Concurrent registration in one course (upto 4 units) alongwith Project Work may be permitted.

B. TECH. (ENGINEERING DESIGN))

Curriculum Structure

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics, and having minimum two years work experience in relevant domains.

.

Nominal duration: The nominal duration of a B.Tech. programme will be 7 semesters.

Curriculum Requirements :

Foundation Courses	:9 courses	(32 units min.)
Discipline Core	:11 courses	(40 units min.)
Discipline Electives	:4 courses	(12 units min.)
Coursework sub total	:24 courses	(84 units min.)
Project Work	:16 units	

Category-wise Programme Structure:

Category	Course No.	Course Title	Units
Foundation Courses (9)			
Mathematics Foundation	ED* ZC233	Calculus	4
	ED* ZC235	Linear Algebra & Optimization	3
Technical Arts / Professional Courses	ED* ZC164	Computer Programming	4
	ED* ZC241	Technical Report Writing	3
	ED* ZC 231	Principles of Management	3
Engineering Foundation	ED* ZC232	Engineering Materials	3
	ED* ZC261	Mechanical Technology	4
	ED* ZC211	Electrical and Electronics Technology	4
	ED* ZC251	Engineering Measurements	4
Discipline Courses			
Core (11)	ED* ZC321	Mechanics of Solids	3
	ED* ZC245	Fluid Mechanics & Machines	4
	ED* ZC332	Mechanical Engineering Design-I	4
	ED* ZC322	Kinematics & Dynamics of Machines	3
	ED* ZC311	Manufacturing Processes	4
	ED* ZC453	Product Design & Development	4
	ED* ZC342	Mechanical Engineering Design-II	4
	ED* ZC434	Quality Control, Assurance & Reliability	4
	ED* ZC433	Mechanical Vibrations & Acoustics	3
	ED* ZC441	Automotive Vehicles	3
	ED* ZC436	Computer Aided Design	4
Electives (any 4)	ED* ZC471	Management Information Systems	3
	ED* ZC324	Mechatronics & Automation	4
	ED* ZC325	Fluid Power Systems	4
	ED* ZC452	Composite Materials and Design	4
	ED* ZC454	Reverse Engineering and Rapid Prototyping	4

B. TECH. (ENGINEERING DESIGN)

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	ED* ZC211	Electrical and Electronics Technology	4	ED* ZC164	Computer Programming	4
	ED* ZC232	Engineering Materials	3	ED* ZC235	Linear Algebra and Optimization	3
	ED* ZC233	Calculus	4	ED* ZC251	Engineering Measurements	4
	ED* ZC261	Mechanical Technology	3	ED* ZC321	Mechanics of Solids	3
		Total	14		Total	14
II	ED* ZC245	Fluid Mechanics and Machines	4	ED* ZC342	Mechanical Engineering Design-II	4
	ED* ZC311	Manufacturing Processes	4	ED* ZC436	Computer Aided Design	4
	ED* ZC322	Kinematics & Dynamics of Machines	3	ED* ZC453	Product Design & Development	4
	ED* ZC332	Mechanical Engineering Design-I	4		Discipline Elective	3(min.)
		Total	15		Total	15
III	ED* ZC433	Mechanical Vibrations & Acoustics	3	ED* ZC241	Technical Report Writing	3
	ED* ZC434	Quality Control, Assurance & Reliability	4	ED* ZC231	Principles of Management	3
	ED* ZC441	Automotive Vehicles	3		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	13		Total	12
	ED* ZC425T	Project Work	16			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

B. TECH. (ENGINEERING TECHNOLOGY)

Curriculum Structure

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics, and having minimum two years work experience in relevant domains.

Nominal duration: The nominal duration of a B.Tech. programme will be 7 semesters.

Curriculum Requirements:

Foundation Courses	:10 courses	(35 units min.)
Discipline Core	:9 courses	(34 units min.)
Discipline Electives	:5 courses	(15 units min.)
Coursework sub total	:24	(84units min.)
Project Work	:16 units	

Category-wise Programme Structure:

Sub-Category	Course No.	Course Title	Units
Foundation Courses (10)			
Mathematics Foundation	MATH ZC233	Calculus	4
	MATH ZC234	Linear Algebra & Optimization	3
	AAOC ZC111	Probability and Statistics	3
Technical Arts / ProfessionalCourses	TA ZC164	Computer Programming	4
	TA ZC312	Technical Report Writing	3
	MGTS ZC211	Principles of Management	3
Engineering Foundation	ENGG ZC243	Engineering Materials	3
	ENGG ZC241	Mechanical Technology	4
	ENGG ZC112	Electrical & Electronics Technology	4
	ENGG ZC233	Engineering Measurements	4
Discipline Courses			
Core (9)	ET ZC413	Engineering Design	4
	ETZC423	Essentials of Project Management	3
	ETZC344	Instrumentation & Control	4
	ENGG ZC242	Maintenance & Safety	3
	ETZC235	Manufacturing Processes	4
	ETZC343	Materials Management	4
	ETZC416	Production Planning & Control	4
	ETZC434	Quality Control, Assurance & Reliability	4
	ETZC424	Plant Layout and Design	4

Sub-Category	Course No.	Course Title	Units
Electives (any 5)	ETZC352	Energy Management	4
	ETZC362	Environmental Pollution Control	3
	EAZC412	Flexible Manufacturing Systems	4
	BITS ZC471	Management Information Systems	3
	ET ZC417	Manufacturing Excellence	4
	ETZC323	Mechatronics & Automation	4
	ESZC343	Microprocessors & Microcontrollers	3
	ET ZC448	Additive Manufacturing	4
	ET ZC449	IoT in Manufacturing	4
	ET ZC442	Advanced Driver Assistance Systems	4
	ET ZC443	Connected Cars	4

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	ENGG ZC112	Electrical & Electronics Technology	4	AAOC ZC111	Probability & Statistics	3
	ENGG ZC243	Engineering Materials	3	ENGG ZC233	Engineering Measurements	4
	MATH ZC233	Calculus	4	MATH ZC234	Linear Algebra & Optimization	3
	TA ZC164	Computer Programming	4	ENGG ZC241	Mechanical Technology	4
		Total	15		Total	14
II	ENGG ZC242	Maintenance & Safety	3	ET ZC344	Instrumentation & Control	4
	ET ZC235	Manufacturing Processes	4	ET ZC343	Materials Management	4
	ET ZC413	Engineering Design	4	ET ZC423	Essentials of Project Management	3
	ET ZC416	Production Planning & Control	4	ET ZC426	Plant Layout & Design	4
		Total	15		Total	15
III	ET ZC434	Quality Control, Assurance & Reliability	4	MGTS ZC211	Principles of Management	3
		Discipline Elective	3(min.)	TA ZC312	Technical Report Writing	3
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	13(min)		Total	12(min)
	BITS ZC425T	Project Work	16			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

B. TECH. (INFORMATION SYSTEMS)

Curriculum Structure

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics, and having minimum two years work experience in relevant domains.

.

Nominal duration: The nominal duration of a B.Tech. programme will be 7 semesters.

Curriculum Requirements:

Foundation Courses	:8 courses	(27 units min.)
Discipline Core	:10 courses	(39 units min.)
Discipline Electives	:6 courses	(18 units min.)
Course work sub total	: 24	(84 units min.)
Project Work	: 16 units	

Category-wise Programme Structure:

Sub-category	Course No.	Course Title	Units
Foundation Courses(8)			
Mathematics Foundation	MATH ZC234	Linear Algebra & Optimization	3
	AAOC ZC111	Probability and Statistics	3
	MATH ZC222	Discrete Structures for Computer Science	3
	MATH ZC233	Calculus	4
Technical Arts/ Professional Courses	TA ZC163	Computer Programming	4
	TA ZC312	Technical Report Writing	3
	MGTS ZC211	Principles of Management	3
Engineering Foundation	ESZC264	Digital Electronics and Microprocessors	4
Discipline Courses			
Core (10)	IS ZC467	Computer Networks	4
	IS ZC353	Computer Organization & Architecture	4
	IS ZC363	Data Structures & Algorithms	4
	IS ZC337	Database Systems & Applications	4
	IS ZC373	Compiler Design	4
	IS ZC313	Object Oriented Programming & Design	4
	IS ZC364	Operating Systems	4
	IS ZC343	Software Engineering	4
	IS ZC327	Systems Programming	4
	IS ZC328	Software Testing	3
Electives (6)	BITS ZC471	Management Information Systems	3
	IS ZC423	Software Development for Portable Devices	3
	IS ZC415	Data Mining	3
	ISZC472	Computer Graphics	3

Sub-category	Course No.	Course Title	Units
	IS ZC446	Data Storage Technologies & Networks	3
	EA ZC473	Multimedia Computing	3
	IS ZC462	Network Programming	3
	IS ZC422	Parallel Computing	3
	IS ZC424	Software for Embedded Systems	3

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	MATH ZC222	Discrete Structures for Computer Science	3	IS ZC313	Object Oriented Programming & Design	4
	MATH ZC233	Calculus	4	IS ZC327	Systems Programming	4
	TA ZC163	Computer Programming	4	MATH ZC234	Linear Algebra & Optimization	3
	ES ZC263	Digital Electronics and Microprocessors	4	IS ZC363	Data Structures and Algorithms	4
		Total	15	Total		15
II	IS ZC353	Computer Organization & Architecture	4	IS ZC373	Compiler Design	4
	IS ZC337	Database Systems & Applications	4	IS ZC343	Software Engineering	4
	IS ZC364	Operating Systems	4	IS ZC467	Computer Networks	4
	AAOC ZC111	Probability and Statistics	3	IS ZC328	Software Testing	3
		Total	15	Total		15
III		Discipline Elective	3(min.)	MGTS ZC211	Principles of Management	3
		Discipline Elective	3(min.)	TA ZC312	Technical Report Writing	3
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	12(min)		Total	12(min)
	BITS ZC425T	Project Work	16			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

B. TECH. MANUFACTURING TECHNOLOGY

Curriculum Structure

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics,and having minimum two years work experience in relevant domains.

Nominal duration: The nominal duration of a B.Tech. programme will be 7 semesters.

Curriculum Requirements:

Foundation Courses	:9 courses	(32 units min.)
Discipline Core	:11 courses	(40 units min.)
Discipline Electives	:4 courses	(12 units min.)
Coursework sub total	:24 courses	(84 units min.)
Project Work	:16 units (min.)	

Category-wise Programme Structure:

Category	Course No.	Course Title	Units
Foundation Courses (9)			
Mathematics Foundation	MT* ZC233	Calculus	4
	MT* ZC235	Linear Algebra & Optimization	3
Technical Arts / Professional Courses	MT* ZC221	Computer Programming	4
	MT* ZC241	Technical Report Writing	3
	MT* ZC 231	Principles of Management	3
Engineering Foundation	MT* ZC236	Engineering Materials	3
	MT* ZC251	Mechanical Technology	4
	MT* ZC112	Electrical and Electronics Technology	4
	MT* ZC213	Engineering Measurements	4
Discipline Courses			
Core (11)	MT* ZC261	Mechanics of Solids	3
	MT* ZC245	Fluid Mechanics & Machines	4
	MT* ZC342	Machine Design	4
	MT* ZC344	Metal Forming and Machining	4
	MT* ZC315	Casting and Welding	4
	MT* ZC331	Production Planning & Control	4
	MT* ZC418	Lean Manufacturing	4
	MT* ZC434	Quality Control, Assurance & Reliability	4
	MT* ZC448	Additive Manufacturing	4
	MT* ZC421	Essentials of Project Management	3
	MT* ZC449	IoT in Manufacturing	4
Electives (any 4)	MT* ZC412	Flexible Manufacturing Systems	4
	MT* ZC324	Mechatronics & Automation	4
	MT* ZC343	Materials Management	4
	MT* ZC346	Instrumentation & Control	4
	MT* ZC347	Microprocessors and Microcontrollers	3
	MT* ZC471	Manufacturing Excellence	4

Category	Course No.	Course Title	Units
	MT* ZC311	Automobile Technology-I	4
	MT* ZC312	Automobile Technology-II	4
	MT* ZC332	Operations Research	4
	MT* ZC234	Maintenance & Safety	3
	MT* ZC452	Composite Materials and Design	4

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	MT* ZC233	Calculus	4	MT* ZC235	Linear Algebra and Optimization	3
	MT* ZC261	Mechanics of Solids	3	MT* ZC251	Mechanical Technology	4
	MT* ZC236	Engineering Materials	3	MT* ZC213	Engineering Measurements	4
	MT* ZC112	Electrical and Electronics Technology	4	MT* ZC221	Computer Programming	4
Total			14	Total		15
II	MT* ZC245	Fluid Mechanics & Machines	4	MT* ZC449	IoT in Manufacturing	4
	MT* ZC315	Casting and Welding	4	MT* ZC331	Production Planning and Control	4
	MT* ZC344	Metal Forming and Machining	4	MT* ZC343	Machine Design	4
	MT* ZC448	Additive Manufacturing	4		Discipline Elective	3(min.)
Total			16	Total		15
III	MT* ZC418	Lean Manufacturing	4	MT* ZC241	Technical Report Writing	3
	MT* ZC434	Quality Control Assurance and Reliability	4	MT* ZC231	Principles of Management	3
	MT* ZC421	Essentials of Project Management	3		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
Total			14(min)	Total		12(min)
	MT* ZC425T	Project Work	16			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Kirloskar Oil Engines, Kolhapur, Bharat Forge, Pune, Tata Motors, Jamshedpur; TACO, Pune; Maruti Suzuki, Gurgaon; Mahindra Motor Vehicles, Cummins, Pune

B. TECH. (POWER ENGINEERING)

Curriculum Structure

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics, and having minimum two years work experience in relevant domains.

.

Nominal duration: The nominal duration of a B.Tech. programme will be 7 semesters.

Curriculum Requirements:

Foundation Courses	: 9 courses (31 units min.)
Discipline Core	: 10 courses (36 units min.)
Discipline Electives	: 5 courses (17 units min.)
Coursework sub total	: 24 courses (84units min.)
Project Work	: 16 units

Sub- Category	Course No	Course Title	Unit
Foundation Courses (9)			
Mathematics Foundation	POW*ZC233	Calculus	4
	POW*ZC234	Linear Algebra & Optimization	3
General Awareness / Technical Arts	POW*ZC164	Computer Programming	4
	POW*ZC232	Principles of Management	3
	POW*ZC321	Technical Report Writing	3
Engineering Foundation	POW* ZC112	Electrical & Electronics Technology	4
	POW* ZC343	Microprocessors & Microcontrollers	3
	POW* ZC231	Thermodynamics	3
	POW* ZC242	Engineering Measurements	4
Discipline Courses (10)			
Core (10)	POW*ZC434	Quality Control, Assurance & Reliability	4
	POW*ZC313	Power Plant Engineering	4
	POW*ZC314	Prime Movers & Fluid Machines	4
	POW*ZC342	Power System Engineering I	3
	POW*ZC344	Instrumentation & Control	4
	POW*ZC421	Essentials of Project Management	3
	POW*ZC431	Maintenance & Safety	3
	POW* ZC316	Power Electronics	4
	POW*ZC441	Power System Engineering II	3
	POW* ZC315	Transport Phenomena	4

Sub- Category	Course No	Course Title	Unit
Electives (any 5)	POW*ZC332	Energy Management	4
	POW*ZC411	Environmental Pollution Control	3
	POW*ZC412	Power System Operation and Control	3
	POW*ZC413	Process Control	3
	POW*ZC422	Power System Drawing & Design	3
	POW*ZC452	Renewable Energy	3
	POW*ZC471	Power Electronics & Drives	3
	POW*ZC481	Plant Layout & Design	4

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	POW* ZC112	Electrical & Electronics Technology	4	POW* ZC234	Linear Algebra & Optimization	3
	POW* ZC164	Computer Programming	4	POW* ZC242	Engineering Measurements	4
	POW* ZC231	Thermodynamics	3	POW* ZC343	Microprocessors & Microcontrollers	3
	POW* ZC233	Calculus	4	POW* ZC315	Transport Phenomena	4
		Total	15		Total	14
II	POW* ZC342	Power System Engineering I	3	POW* ZC434	Quality Control, Assurance & Reliability	4
	POW* ZC344	Instrumentation & Control	4	POW* ZC314	Prime Movers and Fluid Machines	4
	POW* ZC431	Maintenance & Safety	3	POW* ZC441	Power System Engineering II	3
	POW* ZC313	Power Plant Engineering	4		Discipline Elective	3(min.)
		Total	14		Total	14
III	POW* ZC316	Power Electronics	4	POW* ZC321	Technical Report Writing	3
	POW* ZC421	Essentials of Project Management	3	POW* ZC232	Principles of Management	3
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	13		Total	12
	POW* ZC425T	Project Work	16			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Aditya Birla Group, Tata Power, JSW Energy – Mumbai

B. TECH. (PROCESS ENGINEERING)

Curriculum Structure

Normal Input: Employed professionals holding a Technical Diploma or B.Sc. degree with adequate preparation in Mathematics, and having minimum two years work experience in relevant domains.

Nominal duration: The nominal duration of a B.Tech. programme will be 7 semesters.

Curriculum Requirements:

Foundation Courses	:8 courses	(28 units min.)
Discipline Core	:9 courses	(35 units min.)
Discipline Electives	:7 courses	(21 units min.)
Coursework sub total	:24 courses	(84 units min.)
Project Work	:16 units	

Category-wise Programme Structure:

Category	Course No.	Course Title	Units
Foundation Courses (8)			
Mathematics Foundation	PE* ZC233	Calculus #	4
	PE* ZC235	Linear Algebra & Optimization #	3
	PE* ZC113	Probability and Statistics	3
Technical Arts / Professional Courses	PE* ZC164	Computer Programming #	4
	PE* ZC211	Principles of Management #	3
	PE* ZC313	Technical Report Writing #	3
Engineering Foundation	PE* ZC231	Engineering Materials #	3
	PE* ZC213	Engineering Measurements #	4
	PE* ZC112	Electrical & Electronics Technology #	4
Discipline Courses			
Core	PE* ZC321	Chemical Process Calculations	3
	PE* ZC311	Chemical Engineering Thermodynamics	4
	PE* ZC318	Fundamentals of Transport Processes	4
	PE* ZC319	Unit Operations – I	4
	PE* ZC352	Energy Management	4
	PE* ZC452	Process Plant Safety and Environment	4
	PE* ZC453	Process Control & Instrumentation	4
	PE* ZC322	Process Design Principles	4
	PE* ZC412	Process Equipment Design	4
Elective Courses			
Electives	PE* ZC434	Quality Control Assurance & Reliability	4
	PE* ZC314	Power Plant Engineering	4
	PE* ZC234	Manufacturing Processes	4
	PE* ZC411	Production Planning and Control	4
	PE* ZC342	Materials Management	4
	PE* ZC353	Industrial Engineering	3
	PE* ZC423	Essentials of Project Management	3
	PE* ZC361	Environmental Pollution Control	3
	PE* ZC383	Extractive Metallurgy	3
	PE* ZC385	Fertilizer Technology	3

Category	Course No.	Course Title	Units
	PE* ZC382	Cement Technology	3
	PE* ZC384	Fibre & Cellulosic Technology	3
	PE* ZC214	Pharmaceutical Analysis	3
	PE* ZC221	Disinfection & Sterilization Processes	3
	PE* ZC344	Pharmaceutical Quality Control & Regulatory Affairs	3
	PE* ZC252	Mineral Beneficiation & Agglomeration	3
	PE* ZC262	Iron Making	3
	PE* ZC273	Advances in Material Science & Testing	3
	PE* ZC312	Steel Making & Casting	3
	PE* ZC362	Steel Processing	3
	PE* ZC320	Unit Operations – II	4
	PE* ZC323	Corrosion Engineering	3
	PE* ZC324	Chemical Reaction Engineering	3
	PE* ZC272	Furnace Technology	3
	PE* ZC442	Advances in Materials Science	3

Mandatory Foundation Course

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	PE* ZC112	Electrical & Electronics Technology	4	PE* ZC352	Energy Management	4
	PE* ZC231	Engineering Materials	3	PE* ZC213	Engineering Measurements	4
	PE* ZC233	Calculus	4	PE* ZC235	Linear Algebra & Optimization	3
	PE* ZC164	Computer Programming	4	PE* ZC321	Chemical Process Calculations	3
		Total	15		Total	14
II	PE* ZC311	Chemical Engineering Thermodynamics	4	PE* ZC322	Process Design Principles	4
	PE* ZC318	Fundamentals of Transport Processes	4	PE* ZC412	Process Equipment Design	4
	PE* ZC319	Unit Operations – I	4		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	15		Total	15
III	PE* ZC452	Process Plant Safety & Environment	4	PE* ZC313	Technical Report Writing	3
	PE* ZC453	Process Control & Instrumentation	4	PE* ZC211	Principles of Management	3
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	14		Total	12
	PE* ZC425T	Project Work	16			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Aditya Birla Group, Mumbai; JSW Steel, Toranagallu; Vedanta, Jharsuguda; BPCL, Mumbai

Master of Science (M.Sc.) programmes

Program Structure:

Normal Input: Three-year undergraduate degree in relevant disciplines.

Curriculum requirements: Completion of the **M.Sc.** degree programme would require completion of coursework of minimum 15 courses (52 units minimum) and one Project / Thesis / Practice School (8 – 20 units), adding up to a total of 72 units minimum.

Nominal duration: The nominal duration of a M.Sc. programme will be 4 semesters.

Curriculum Structure for M.Sc. programs:

Category	**Number of Courses Required**	**Number of Units Required**
I Foundation Courses	2-8	6-32
II Discipline Courses		
Discipline Core	5-10	15-40
Discipline Electives	2-6	6-20
Coursework Sub-Total	**15 courses (min)**	**52 units (min)**
III Project / Thesis / Practice School	1	8 -20
Total	**16 courses (min)**	**72 units (min)**

Note: Concurrent registration in two courses (upto 8 units) alongwith Project is to be permitted.

M.Sc. (BUSINESS ANALYTICS)
Curriculum Structure

Type of Input: Employed professionals working in a variety of business domains, holding a three year undergraduate degree in relevant disciplines with adequate preparation in mathematics, with minimum one year work experience in relevant domains.

Nominal Duration: Five Semesters

Curriculum Structure

Foundation courses

Course No.	Course Title	Units
BA* ZG522	Business Data Mining	4
BA* ZG521	Financial Management	4
BA* ZC413	Introduction to Statistical Methods	3
BA* ZC471	Management Information Systems	3
BA* ZC411	Marketing	4
BA* ZC412	Models and Applications in Operations Research	4
BA* ZG621	Supply Chain Management	4

Core courses

Course No.	Course Title	Units
BA* ZG524	Advanced Statistical Methods	4
BA* ZC415	Analytics for Competitive Advantage	4
BA* ZG525	Big Data Analytics	4
BA* ZG523	Introduction to Data Science	3
BA* ZC414	Optimization Methods for Analytics	4
BA* ZG512	Predictive Analytics	4

Pool of electives

Course No.	Course Title	Units
BA* ZC418	Advanced Financial Modeling	4
BA* ZC420	Data Visualization	3
BA* ZC417	Financial Risk Analytics	4
BA* ZC425	HR Analytics	4
BA* ZC416	Investment Banking Analytics	4
BA* ZC422	Marketing Analytics	4
BA* ZC421	Marketing Models	4
BA* ZC423	Retail Analytics	4
BA* ZC424	Supply Chain Analytics	4
BA* ZC426	Real-time Analytics	4
BA* ZG537	Text Analytics	4

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	BA* ZC411	Marketing	4	BA* ZG521	Financial Management	4
	BA* ZC471	Management Information Systems	3	BA* ZG522	Business Data Mining	4
	BA* ZC412	Models and Applications in Operational Research	4	BA* ZG621	Supply Chain Management	4
	BA* ZC413	Introduction to Statistical Methods	3	BA* ZG523	Introduction to Data Science	3
		Total	14		Total	15
II	BA* ZG524	Advanced Statistical Methods	4	BA* ZC415	Analytics for Competitive Advantage	4
	BA* ZG525	Big Data Analytics	4		Elective 1	(3 min)
	BA* ZG512	Predictive Analytics	4		Elective 2	(3 min)
	BA* ZC414	Optimization Methods for Analytics	4		Elective 3	(3 min)
		Total	16		Total	13 (min)
III		Elective 4	(3 min)			
	BA* ZG625T	Project	10			
		Total	13 (min)			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

M.Sc. (INFORMATION SYSTEMS)

Curriculum Structure

Normal Input: Employed professionals holding a B.Sc. or BCA degree with adequate preparation in Mathematics, and having minimum one year work experience in relevant domains.

.

Nominal duration: 5 semesters.

Curriculum Requirements :

Foundation Courses : 5 courses (17 units min.)
Discipline Core : 9 courses (36 units min.)
Discipline Electives : 4 courses (12 units min.)
Coursework sub total :18 courses (65units min.)
Project :8 units

Category-wise Programme Structure:

Sub- Category	Course No	Course Title	Unit
Foundation Courses (5)			
Mathematics Foundation	MATH ZC234	Linear Algebra & Optimization	3
	AAOC ZC111	Probability and Statistics	3
	MATH ZC222	Discrete Structures for Computer Science	3
General Awareness / Technical Arts	TA ZC163	Computer Programming	4
Engineering Foundation	ESZC264	Digital Electronics and Microprocessors	4
Discipline Courses			
Core	IS ZC373	Compiler Design	4
	IS ZC467	Computer Networks	4
	IS ZC353	Computer Organization & Architecture	4
	IS ZC363	Data Structures & Algorithms	4
	IS ZC337	Database Systems & Applications	4
	IS ZC313	Object Oriented Programming & Design	4
	IS ZC364	Operating Systems	4
	IS ZC343	Software Engineering	4
	IS ZC327	Systems Programming	4
Electives (4)	CS ZG551	Advanced Compilation Techniques	5
	CS ZG623	Advanced Operating Systems	5
	IS ZC444	Artificial Intelligence	3
	BITS ZC471	Management Information Systems	3
	IS ZC472	Computer Graphics	3
	EA ZC473	Multimedia Computing	3
	IS ZC415	Data Mining	3
	IS ZC422	Parallel Computing	3
	IS ZC423	Software Development for Portable Devices	3
	IS ZC424	Software for Embedded Systems	3
	IS ZC446	Data Storage Technologies & Networks	3
	IS ZC462	Network Programming	3

M.Sc. (INFORMATION SYSTEMS)

Semesterwise Pattern

Normal Input: Employed professionals holding a B.Sc. or BCA degree with adequate preparation in Mathematics, having minimum one year work experience in relevant domains.

Nominal duration: 5 semesters.

Year	First Semester		U	Second Semester		U
I	MATH ZC222	Discrete Structures for Computer Science	3	IS ZC313	Object Oriented Programming & Design	4
	MATH ZC234	Linear Algebra & Optimization	3	IS ZC327	Systems Programming	4
	TA ZC163	Computer Programming	4	AAOC ZC111	Probability and Statistics	3
	ES ZC263	Digital Electronics and Microprocessors	4	IS ZC363	Data Structures and Algorithms	4
		Total	15		Total	14
II	IS ZC353	Computer Organization & Architecture	4	IS ZC373	Compiler Design	4
	IS ZC337	Database Systems & Applications	4	IS ZC343	Software Engineering	4
	IS ZC364	Operating Systems	4	IS ZC467	Computer Networks	4
		Discipline Elective	3(min.)		Discipline Elective	3(min.)
		Total	15		Total	15
III	BITS ZC426T	Project	8			
		Discipline Elective	3(min.)			
		Discipline Elective	3(min.)			
		Total	14(min)			

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

B.Sc. Programmes for Trainees / Working Professionals

Normal Input:	Trainees / Employed professionals who have completed their 10+2 (in Science stream) or equivalent educational qualification with minimum 60% aggregate marks.
Completion requirement	Successful completion of the B.Sc. degree programme would require completion of minimum of 23 courses (105 units minimum) with a CGPA of at least 4.50.
Nominal duration	The nominal duration of a B.Sc. programme will be 8 semesters.

Curriculum Structure of B.Sc. Programmes

Category	Number of Courses Required	Number of Units Required
I. Foundation Courses	8-12	24-40
II. Discipline Courses Discipline Core Electives	 10-16 4-6	 34-58 12-24
Coursework Sub-Total	**28 courses (min)**	**90 units (min)**
III. Project Courses	Min 1 and Max 2	15-20 units
Total	**29 courses (min)**	**105 Units (min)**

Note: Concurrent registration in at most two courses (upto 8 units) along with a Project Course may be permitted if the total units in that semester do not exceed 15.

B.Sc. (Design & Computing)

Input Qualification
Trainees / Employed professionals who have completed their 10+2 (including Mathematics and Physics) or equivalent educational qualification with minimum 60% aggregate marks (and minimum 60% marks each in Mathematics and Physics), and having at least one year of industry experience.

Normal Duration: Eight semesters

Program Structure

Foundation courses

Course No.	Course Title	Units
Humanities Foundation		
BSDC* ZC151	Writing Practice	3
BSDC* ZC231	Dynamics of Social Change	3
BSDC* ZC236	Symbolic Logic	3
BSDC* ZC242	Cultural Studies	3
BSDC* ZC322	Critical Analysis of Literature and Cinema	3
Mathematics Foundation		
BSDC* ZC111	Probability & Statistics	3
BSDC* ZC234	Linear Algebra and Optimization	3
BSDC* ZC355	Statistical Inferences and Applications	3
Science & Engineering Foundation		
BSDC* ZC112	Electrical Sciences	3
Other Courses		
BSDC* ZC142	Computer Programming	4
BSDC* ZC225	Environmental Studies	3

Discipline Core courses

Course No.	Course Title	Units
BSDC* ZC215	Digital Design	4
BSDC* ZC222	Discrete Structures for Computer Science	3
BSDC* ZC226	Creative Thinking	3
BSDC* ZC311	Information Security	3
BSDC* ZC312	Evolution of Design	3
BSDC* ZC313	Object Oriented Programming and Design	4
BSDC* ZC316	Computing and Design	3
BSDC* ZC317	Algorithm Design	3
BSDC* ZC328	Humanities and Design	3
BSDC* ZC353	Computer Organization and Architecture	4

Course No.	Course Title	Units
BSDC* ZC356	Data Structures	4
BSDC* ZC365	Human Computer Interaction	3
BSDC* ZC412	Software Design Principles	4

Pool of Electives		
Course No.	**Course Title**	**Units**
BSDC* ZC211	Principles of Economics	3
BSDC* ZC214	Science, Technology and Modernity	3
BSDC* ZC224	Print and Audio-Visual Advertisement	3
BSDC* ZC314	Software Development for Portable Devices	3
BSDC* ZC315	Web Programming	3
BSDC* ZC327	Systems Programming	3
BSDC* ZC329	Design for Social Media	3
BSDC* ZC330	Appreciation of Art	3
BSDC* ZC342	Computer Mediated Communication	3
BSDC* ZC343	Software Engineering	4
BSDC* ZC344	Professional Ethics	3
BSDC* ZC350	Human Rights: History, Theory and Practice	3
BSDC* ZC351	Organizational Behaviour	3
BSDC* ZC352	Advanced Writing Course	3
BSDC* ZC354	Introduction to Architecture	3
BSDC* ZC364	Operating Systems	3
BSDC* ZC413	Database Design	4
BSDC* ZC432	Applied Statistical Methods	3
BSDC* ZC481	Computer Networks	3

Project Type Courses

Course No.	Course Title	Units
BSDC* ZC229T	Design Project	5
BSDC* ZC499T	Capstone Project	15

B.Sc. (Design & Computing)

Semester-wise Pattern

Course No.	Course Title	Units	Course No.	Course Title	Units
First Year					
BSDC* ZC151	Writing Practice	3	BSDC* ZC231	Dynamics of Social Change	**3**
BSDC* ZC236	Symbolic Logic	3	BSDC* ZC142	Computer Programming	**4**
BSDC* ZC112	Electrical Sciences	**3**	BSDC* ZC222	Discrete Structures for Computer Science	**3**
BSDC* ZC111	Probability & Statistics	3	BSDC* ZC225	Environmental Studies	**3**
	Total	**12**		**Total**	**13**
Second Year					
BSDC* ZC215	Digital Design	4	BSDC* ZC353	Computer Organization and Architecture	**4**
BSDC* ZC356	Data Structures	4	BSDC* ZC313	Object Oriented Programming and Design	**4**
BSDC* ZC234	Linear Algebra & Optimization	3	BSDC* ZC242	Cultural Studies	**3**
BSDC* ZC226	Creative Thinking	3	BSDC* ZC312	Evolution of Design	3
	Total	**14**		**Total**	**14**
Summer Term					
BSDC* ZC229T Design Project5 Units					
Third Year					
BSDC* ZC317	Algorithm Design	**3**	BSDC* ZC412	Software Design Principles	**4**
BSDC* ZC322	Critical Analysis of Literature and Cinema	**3**	BSDC* ZC316	Computing and Design	**3**
BSDC* ZC328	Humanities and Design	**3**	BSDC* ZC355	Statistical Inferences and Applications	**3**
	Elective	3/4		Elective	**3/4**
	Total	**12/13**		**Total**	**13/14**
Fourth Year					
BSDC* ZC311	Information Security	3	BSDC* ZC499T	Capstone Project	**15**
BSDC* ZC365	Human Computer Interaction	**3**			
	Elective	3/4			
	Elective	3/4			
	Total	**12/14**		**Total**	**15**

Note: In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing collaborating organization.

B.Sc. (Engineering Science)

Input Qualification

Trainees/ Employed professionals who have completed their 10+2 (including Math, Physics and Chemistry) educational qualification with minimum of 60% aggregate marks in Math, Physics and Chemistry and having at least 6 months of work experience.

Nominal Duration: Eight semesters

Programme Structure

Foundation Courses

Course No.	Course Title	Units
Humanities Foundation		
ES* ZC116	English Language Practice	3
ES* ZC220	Introduction to Economics	3
Mathematics Foundation		
ES* ZC111	Probability and Statistics	3
ES* ZC131	Engineering Mathematics - I	3
ES* ZC212	Engineering Mathematics - II	3
ES* ZC234	Linear Algebra & Optimization	3
Science and Engineering Foundation		
ES* ZC115	General Physics I	3
ES* ZC117	Chemistry - I	3
ES* ZC118	General Physics II	3
ES* ZC119	General Physics III	3
ES* ZC120	Chemistry - II	3
Other Courses		
ES* ZC142	Computer Programming	4
Foundation course required: 8-12 (Units:24-40)		**37**

Core Courses

Course No.	Course Title	Units
ES* ZC217	Materials Science -I	3
ES* ZC219	Materials Science –II	3
ES* ZC218	Introduction to Thermodynamics & Applications	4
ES* ZC333	Introduction to Transport Phenomena	3
ES* ZC319	Mechanisms	4
ES* ZC227	Basic Electrical and Electronics Engineering	4
ES* ZC320	Introduction to Industrial Instrumentation	4

ES* ZC232	Fundamentals of Engineering Measurements	3
ES* ZC225	Environmental Studies	3
ES* ZC321	Manufacturing Science	4
ES* ZC334	Numerical & Computational Methods	3
ES* ZC335	Integrated Engineering Science	3
Discipline Core Courses Required : 10-16 (Units: 34-58)		**41**

Pool of Electives

Course No.	Course Title	Units
ES* ZC336	Contemporary Manufacturing Processes	4
ES* ZC337	Digital Electronics & Microcontrollers	3
ES* ZC338	Digital Manufacturing	4
ES* ZC339	Engineering Design & Drawing	4
ES* ZC340	Introduction to Supply Chain Management	3
ES* ZC345	Maintenance for Productivity & Safety	3
ES* ZC346	Manufacturing Systems Design & Analysis	4
ES* ZC347	Quality Control & Metrology	4
ES* ZC348	Robotics & Automation	3

Project Type Courses

Course No.	Course Title	Units
ES* ZC229T	Project	5
ES* ZC498T	Capstone Project	10

B.Sc. (Engineering Science)

Semester wise Pattern

Course No.	Course Title	Units	Course No.	Course Title	Units
Semester I			**Semester II**		
First Year					
ES* ZC115	General Physics I	3	ES* ZC118	General Physics II	3
ES* ZC117	Chemistry - I	3	ES* ZC111	Probability and Statistics	3
ES* ZC116	English Language Practice	3	ES* ZC142	Computer Programming	4
ES* ZC131	Engineering Mathematics - I	3	ES* ZC120	Chemistry - II	3
	Total	12		**Total**	13
Second Year					
ES* ZC119	General Physics III	3	ES* ZC212	Engineering Mathematics - II	3
ES* ZC234	Linear Algebra & Optimization	3	ES* ZC218	Introduction to Thermodynamics & Applications	4
ES* ZC217	Materials Science - I	3	ES* ZC219	Materials Science - II	3
ES* ZC227	Basic Electrical & Electronics Engineering	4	ES* ZC220	Introduction to Economics	3
	Total	13		**Total**	13
Summer Term					
ES* ZC229T Project 5 Units					
Third Year					
ES* ZC232	Fundamentals of Engineering Measurements	3	ES* ZC225	Environmental Studies	3
ES* ZC319	Mechanisms	4	ES* ZC320	Introduction to Industrial Instrumentation	4
ES* ZC333	Introduction to Transport Phenomena	3	ES* ZC321	Manufacturing Sciences	4
ES* ZC334	Numerical & Computational Methods	3	ES* ZC335	Integrated Engineering Science	3
	Total	13		**Total**	14
Fourth Year					
	Elective I	3 (min)		Elective V	3 (min)
	Elective II	3 (min)	ES* ZC498T	Capstone Project	10
	Elective III	3 (min)			
	Elective IV	3 (min)			
	Total	12 (min)		**Total**	13 (min)

B.Sc. (Pharmaceutical Sciences)

Type of Input
Trainees / Employed professionals who have completed their 10+2 (including Mathematics/Biology, Physics, and Chemistry as subjects) or equivalent educational qualification, with minimum 60% aggregate marks.
Nominal Duration: Eight semesters

Programme Structure

Foundation Courses

Course No.	Course Title	Units
Humanities Foundation		
PS* ZC221	Business Communication	3
PS* ZC313	Technical Report Writing	3
PS* ZC343	Professional Ethics	3
Mathematics Foundation		
PS* ZC111	Probability and Statistics	3
PS* ZC113	General Mathematics - I	3
PS* ZC114	General Mathematics - II	3
PS* ZC235	Linear Algebra & Optimization	3
Science and Engineering Foundation		
PS* ZC318	Fundamentals of Transport Processes	4
Other Courses		
PS* ZC225	Environmental Studies	3

Core Courses

Course No.	Course Title	Units
PS* ZC112	Human Anatomy and Physiology	3
PS* ZC222	Pharmaceutical Quality & GMP	4
PS* ZC223	Fundamentals of Biochemistry and Microbiology	4
PS* ZC231	Physical and Inorganic Chemistry	3
PS* ZC234	Techniques in Pharmaceutical Analysis	4
PS* ZC241	Pharmaceutical Chemistry	3
PS* ZC244	Physical Pharmacy	3
PS* ZC311	Pharmaceutical Unit Operations – I	3
PS* ZC312	Pharmaceutical Unit Operations – II	3
PS* ZC314	Pharmaceutical Jurisprudence in India	3
PS* ZC331	Pharmaceutical Formulations – I	3
PS* ZC332	Pharmaceutical Formulations – II	4
PS* ZC341	Drug Discovery and Action	4
PS* ZC342	Medicinal Chemistry	3
PS* ZC344	Natural Drugs	3

Pool of Electives

Course No.	Course Title	Units
PS* ZC212	Basic Statistical Process Control	3
PS* ZC213	Scale-up of Pharmaceutical Operations	3
PS* ZC214	Utilities in Pharmaceutical Operations	3
PS* ZC224	Novel Drug Delivery Systems	3
PS* ZC232	Chemistry of Synthetic Drugs	3
PS* ZC233	Pharmaceutical Packaging	3
PS* ZC321	Chemical Process Calculations	3
PS* ZC322	Pharmaceutical Quality by Design	3
PS* ZC323	Sterile Pharmaceutical Products	3
PS* ZC324	Name Reactions in Chemical Synthesis	3
PS* ZC361	Environmental Pollution Control	3
PS* ZC414	Biopharmaceutics	3

Project Type Courses

Course No.	Course Title	Units
PS*ZC229T	Project	5
PS*ZC499T	Capstone Project	15

B.Sc. (Pharmaceutical Sciences)

Semesterwise Pattern

Course No.	Course Title	Units	Course No.	Course Title	Units
First Year					
PS* ZC113	General Mathematics - I	3	PS* ZC114	General Mathematics - II	3
PS* ZC231	Physical & Inorganic Chemistry	3	PS* ZC311	Pharmaceutical Unit Operations- I	3
PS* ZC112	Human Anatomy and Physiology	3	PS* ZC241	Pharmaceutical Chemistry	3
PS* ZC313	Technical Report Writing	3	PS* ZC221	Business Communication	3
	Total	12		**Total**	12
Second Year					
PS* ZC235	Linear Algebra & Optimization	3	PS* ZC111	Probability and Statistics	3
PS* ZC312	Pharmaceutical Unit Operations – II	3	PS* ZC331	Pharmaceutical Formulations – I	3
PS* ZC244	Physical Pharmacy	3	PS* ZC341	Drug Discovery and Action	4
PS* ZC223	Fundamentals of Biochemistry and Microbiology	4	PS* ZC234	Techniques in Pharmaceutical Analysis	4
	Total	13		**Total**	14
Summer Term					
PS* ZC229T Project5 Units					
Third Year					
PS* ZC332	Pharmaceutical Formulations – II	4	PS* ZC318	Fundamentals of Transport Processes	4
PS* ZC342	Medicinal Chemistry	3	PS* ZC344	Natural Drugs	3
PS* ZC314	Pharmaceutical Jurisprudence in India	3	PS* ZC222	Pharmaceutical Quality & GMP	4
	Elective	3/4		Elective	3/4
	Total	13/14		**Total**	14/15
Fourth Year					
PS* ZC343	Professional Ethics	3	PS* ZC499T	Capstone Project	15
PS* ZC225	Environmental Studies	3			
	Elective	3/4			
	Elective	3/4			
	Total	12-14		**Total**	15

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Four-semester M.Tech. programmes

Input Qualification:

The students admitted to the proposed four-semester M.Tech. programs must

(i) hold an Integrated First Degree of BITS or its equivalent and

(ii)be employed professionals with adequate work experience in a relevant industry.

Curriculum Requirements for M.Tech. programs

The nature of the input to these programs and the objectives / orientation of Work Integrated Learning Programs are different from those of the on-campus programs. These programs may be offered across a broad spectrum of (i) technical disciplines and specializations with as well as (ii) industry domains and cross-disciplinary subjects. It is also to be observed that learning and coursework in these programs are integrated within a professional / technical environment.

Based on these facts and observations, the curriculum has been designed in such a way to broadly enable different combinations of subjects at a higher degree level. In particular, the structure will enable Departments to offer an M.Tech. program in a broad discipline with or without specialization, or offer an M.Tech. program in a specialized area within a discipline or across multiple disciplines.

A. Completion of the program would require:

i. At least 12 courses (totaling at least 48 units) towards coursework nominally spread over three semesters and

ii. Dissertation (16 units) in one semester, that is usually the final semester.

B. The Department(s) offering a specific program must then categorize the coursework requirement as follows:

i. **Core**: 8 courses / 30 units (max.)

ii. **Specialization** (if applicable):

a. 3 courses / 12 units (min.) to 6 courses / 30 units (max.)

b. Some Specialization courses may be mandatory and some may be electives.

iii. Total of Core and Specialization courses may not exceed 10 courses (and 45 units).

iv. Rest of the coursework requirement may be obtained via general electives within the discipline but not necessarily within the specialization.

v. At most 3 courses out of the total of 12 taken by a student may be at the 4^{th} level – the rest must be higher degree courses (i.e. specifically, 5^{th} or 6^{th} level).

Eight-semester Integrated M.Tech. programme

Curriculum Structure for an Integrated M.Tech. programme:

The curriculum structure and requirements of the eight-semester Integrated M.Tech. programme will include the requirements of the corresponding Integrated First Degree programme and four-semester M.Tech. programme, with the following provisions:

1. The electives requirement of the Integrated First Degree programme will be subsumed by the coursework requirement of the Integrated M.Tech. programme, and
2. The Project Work requirement of the Integrated First Degree programme, will be subsumed by the Dissertation requirement of the Integrated M.Tech. programme.

Given these provisions, the following requirements for the curriculum are proposed:

Category	Number of Courses Required	Number of Units Required
I Foundation Courses	5-10	15-32
II Discipline Courses		
Discipline Core	12-16*	42-66*
Discipline Electives	6-12	20-36
Sub-Total	18 - 22 courses#	64 - 80 units
Course-Work Sub-Total	28 courses (min)	96 units (min)
III DISSERTATION	1	16
Total	29 courses (min)	112 units (min)

* Nominally, each course is of 3 units. But, at least two of the Discipline courses are required to be of 4 units or higher.

\# At least eight of these courses must be Higher Degree courses (i.e. specifically, 5^{th} or 6^{th} level)

Specializations (if applicable)

The Department(s) offering **specializations** within a specific Integrated M.Tech. programme should ensure that the following requirements are met:

1. Specialization (if applicable):
    a. 3 courses / 12 units (min.) to 6 courses / 30 units (max.)
    b. Some specialization courses may be mandatory and some may be electives.
2. Rest of the elective requirements may be obtained through general electives within the discipline, but not necessarily within the specialization.

M. Tech. (Automotive Electronics)

Type of Input: Employed professionals holding a B.E./B.Tech. degree in Automotive/ EEE /ECE/Instrumentation/Mechatronics or equivalent, with minimum one year work experience in relevant domains.

Nominal Duration: Four Semesters

Programme Structure:

Core Courses

Course No.	Course Title	Units
AEL* ZC441	Automotive Vehicles	3
AEL* ZC442	Advanced Driver Assistance Systems	4
AEL* ZG510	Automotive Control Systems	5
AEL* ZG512	Embedded System Design	4
AEL* ZG513	Automotive Communication Systems	5
AEL* ZG533	Autotronics	5
AEL* ZG534	Automotive Networking	4

Pool of Electives

Course No.	Course Title	Units
AEL* ZC443	Connected Cars	4
AEL* ZG514	Robust and Intelligent Systems Design	5
AEL* ZG517	Automotive Systems Engineering	4
AEL* ZG518	Electric and Hybrid Vehicles	4
AEL* ZG519	Automotive Security	4
AEL* ZG531	Product Design	5
AEL* ZG554	Reconfigurable Computing	5
AEL* ZG557	Artificial and Computational Intelligence	5
AEL* ZG621	Safety Critical Advanced Automotive Systems	4
AEL* ZG626	Hardware Software Co-Design	5
AEL* ZG631	Automotive Diagnostics and Interfaces	5

Dissertation

Course No.	Course Title	Units
AEL* ZG628T	Dissertation	16

M. Tech. (Automotive Electronics)

Semesterwise pattern

Year	First Semester			Second Semester		
	Course No.	Course Title	Units	Course No.	Course Title	Units
I	AEL* ZC441	Automotive Vehicles	3	AEL* ZC442	Advanced Driver Assistance Systems	4
	AEL* ZG533	Autotronics	5	AEL* ZG513	Automotive Communication Systems	5
	AEL* ZG512	Embedded System Design	4	AEL* ZG534	Automotive Networking	4
	AEL* ZG510	Automotive Control Systems	5		Elective I	4/5
	Total		17	Total		17-18
II		Elective II	4/5	AEL* ZG628T	Dissertation	16
		Elective III	4/5			
		Elective IV	4/5			
		Elective V	4/5			
	Total		16-20	Total		16

M. Tech. Automotive Engineering

Curriculum Structure

Input Requirements

Employed professionals in Automotive Industries and holding an Integrated First Degree of BITS in Mechanical Engineering or Electrical & Electronics Engineering or its equivalent, with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards coursework, and

b) Dissertation (16 units)

The coursework requirement for the program would consist of a set of core courses and elective courses. The core course requirement is mandatory for all students in a given programme. Rest of the coursework must be completed through elective courses.

Programme Structure

Core Courses (5)

Course No.	Course Title	Units
AE* ZG511	Mechatronics	5
AE* ZG516	Advances in Internal Combustion Engines	4
AE* ZG517	Automotive Systems Engineering	4
AE* ZG524	Vehicle Dynamics	4
AE* ZG633	Advances in Vehicle Body Structures	4

Pool of Electives (21)

AE* ZC442	Advanced Driver Assistance Systems	4
AE* ZC443	Connected Cars	4
AE* ZG510	Automotive Control Systems	5
AE* ZG512	Embedded Systems Design	4
AE* ZG513	Maintenance Engineering	5
AE* ZG514	Advanced Automotive Systems	4
AE* ZG515	Non-Destructive Testing	5
AE* ZG518	Electric and Hybrid Vehicles	4
AE* ZG519	Automotive Security	4
AE* ZG520	World Class Manufacturing	5
AE* ZG522	Advanced Vehicle Acoustics	4
AE* ZG523	Project Management	4
AE* ZG531	Product Design	5

Course No.	Course Title	Units
AE* ZG532	Computer Aided Engineering	5
AE* ZG535	Advanced Engineering Mathematics	5
AE* ZG542	Just-in-time Manufacturing	4
AE* ZG611	Computational Fluid Dynamics & Heat Transfer	4
AE* ZG612	Advances in Materials, Composites & Plastics	4
AE* ZG613	Tribology	5
AE* ZG614	Fracture Mechanics	5
AE* ZG615	Advanced Engine Technology	5
AE* ZG621	Durability, Crash & Safety Engineering	4
AE* ZG622	Advanced Manufacturing Processes	4

Note: In the above programme structure, the symbol * in the course numbers, can be substituted by the letters representing the collaborating organization

M. Tech. Automotive Engineering

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	AE* ZG517	Automotive Systems Engineering	4	AE* ZG524	Vehicle Dynamics	4
	AE* ZG511	Mechatronics	5	AE* ZG633	Advances in Vehicle Body Structures	4
	AE* ZG516	Advances in Internal Combustion Engines	4		Elective	(4 min)
		Elective	(4 min)		Elective	(4 min)
Total			**17**	**Total**		**17**
II		Elective	(4 min)	AE* ZG628T	Dissertation	16
		Elective	(4 min)			
		Elective	(4 min)			
		Elective	(4 min)			
Total			**16**	**Total**		**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Tata Technologies and Tata Motors, Pune; Mercedes Benz, Bangalore

M. Tech. (Computing Systems & Infrastructure)

Curriculum

Type of Input

The students admitted to the M.Tech. Computing Systems & Infrastructure programme must:

(i) Hold an Integrated First Degree of BITS or its equivalent in relevant disciplines, and

(ii) Be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: Four Semesters

Programme Structure

Core Courses (6)

Course No.	Course Title	Units
CSI* ZG525	Advanced Computer Networks	5
CSI* ZG527	Cloud Computing	5
CSI* ZG522	Design and Operation of Data Centers	5
CSI* ZG538	Infrastructure Management	4
CSI* ZG524	Middleware Technologies	4
CSI* ZG513	Network Security	4

Pool of Electives (11)

Course No.	Course Title	Units
CSI* ZC446	Data Storage Technologies and Networks	3
CSI* ZC463	Cryptography	3
CSI* ZG511	IT Infrastructure Projects & Processes	3
CSI* ZG523	Introduction to Data Science	3
CSI* ZG528	Cyber Physical Systems	4
CSI* ZG514	Data Warehousing	5
CSI* ZG515	Introduction to DevOps	4
CSI* ZC462	Network Programming	3
CSI* ZG656	Networked Embedded Applications	4
CSI* ZG533	Service-Oriented Computing	4
CSI* ZC424	Software Development for Portable Devices	3
CSI* ZG582	Telecom Network Management	5
CSI* ZG526	Web Technologies	4
CSI* ZG520	Wireless & Mobile Communication	5
CSI* ZG518	Database Design & Applications	5

M. Tech. (Computing Systems & Infrastructure)

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	CSI* ZG513	Network Security	4	CSI* ZG522	Design and Operation of Data Centers	5
	CSI* ZG527	Cloud Computing	5	CSI* ZG525	Advanced Computer Networks	5
		Elective 1	(3 min)		Elective 3	(3 min)
		Elective 2	(3 min)		Elective 4	(3 min)
		Total	15		Total	16
II	CSI* ZG524	Middleware Technologies	4	CSI* ZG628T	Dissertation	16
	CSI* ZG538	Infrastructure Management	4			
		Elective 5	(3 min)			
		Elective 6	(3 min)			
		Total	14		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Wipro Bangalore

Integrated M. Tech. (Computing Systems & Infrastructure)

Type of Input

The students admitted to the Integrated M.Tech. Computing Systems & Infrastructure programme must:

(i) Hold a B.Sc. / BCA degree or its equivalent in relevant disciplines with adequate background in Mathematics, and

(ii) Be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: Eight Semesters

Programme Structure

Foundation Courses (5)

	Course NO.	Course Title	Units
Mathematics Foundation	CSI* ZC132	Linear Algebra & Optimization	3
	CSI* ZC213	Probability & Statistics	3
	CSI* ZC252	Discrete Structures for Computer Science	3
Engineering Foundation	CSI* ZC263	Digital Electronics & Microprocessors	4
Technical Arts / Professional Course	CSI* ZC163	Computer Programming	4

Core Courses (15)

Course No.	Course Title	Units
CSI* ZG525	Advanced Computer Networks	5
CSI* ZG527	Cloud Computing	5
CSI* ZC467	Computer Networks	4
CSI* ZC353	Computer Organization & Architecture	4
CSI* ZC446	Data Storage Technologies & Networks	3
CSI* ZC363	Data Structures & Algorithms	4
CSI* ZC337	Database Systems & Applications	4
CSI* ZG522	Design and Operation of Data Centers	5
CSI* ZG538	Infrastructure Management	4
CSI* ZG511	IT Infrastructure Projects & Processes	3
CSI* ZG524	Middleware Technologies	4
CSI* ZG513	Network Security	4
CSI* ZC313	Object Oriented Programming & Design	4
CSI* ZC364	Operating Systems	4
CSI* ZC327	Systems Programming	4

Pool of Electives (13)

Course No.	Course Title	Units
CSI* ZC463	Cryptography	3
CSI* ZG528	Cyber Physical Systems	4
CSI* ZG514	Data Warehousing	5
CSI* ZC311	Information Security	3
CSI* ZG523	Introduction to Data Science	3
CSI* ZG515	Introduction to DevOps	4
CSI* ZC462	Network Programming	3
CSI* ZG656	Networked Embedded Applications	4
CSI* ZG533	Service Oriented Computing	4
CSI* ZC424	Software Development for Portable Devices	3
CSI* ZG582	Telecom Network Management	5
CSI* ZG526	Web Technologies	4
CSI* ZG520	Wireless & Mobile Communication	5

Integrated M. Tech. (Computing Systems & Infrastructure)

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	CSI* ZC132	Linear Algebra & Optimization	3	CSI* ZC213	Probability & Statistics	3
	CSI* ZC252	Discrete Structures for Computer Science	3	CSI* ZC353	Computer Organization & Architecture	4
	CSI* ZC163	Computer Programming	4	CSI* ZC363	Data Structures & Algorithms	4
	CSI* ZC263	Digital Electronics & Microprocessors	4	CSI* ZC327	Systems Programming	4
		Total	**14**		**Total**	**15**
II	CSI* ZC337	Database Systems & Applications	4	CSI* ZC313	Object Oriented Programming & Design	4
	CSI* ZC364	Operating Systems	4	CSI* ZC446	Data Storage Technologies & Networks	3
	CSI* ZC467	Computer Networks	4	CSI* ZG511	IT Infrastructure Projects & Processes	3
		Elective 1	(3 min)		Elective 2	(3 min)
		Total	**15 (min)**		**Total**	**(13 min)**
III	CSI* ZG513	Network Security	4	CSI* ZG522	Design and Operation of Data Centers	5
	CSI* ZG525	Advanced Computer Networks	5	CSI* ZG538	Infrastructure Management	4
	CSI* ZG527	Cloud Computing	5		Elective 4	(3 min)
		Elective 3	(3 min)		Elective 5	(3 min)
		Total	**(17 min)**		**Total**	**(15 min)**
IV	CSI* ZG524	Middleware Technologies	4	CSI* ZG628T	Dissertation	16
		Elective 6	(3 min)			
		Elective 7	(3 min)			
		Elective 8	(3 min)			
		Total	**(13 min)**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Wipro Bangalore

M.Tech. Data Science & Engineering

Curriculum Structure

Type of Input	Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ B.Tech. or M.Sc. / MCA with minimum one-year work experience in relevant domains.
Nominal Duration	Four Semesters

Programme Structure

Core courses (6)

Course No.	Course Title	Units
DSE* ZC413	Introduction to Statistical Methods	3
DSE* ZC415	Data Mining	3
DSE* ZC416	Mathematical Foundations for Data Science	4
DSE* ZG516	Computer Organization & Software Systems	5
DSE* ZG519	Data Structures and Algorithms Design	5
DSE* ZG523	Introduction to Data Science	3

Pool of Electives (15)

Course No.	Course Title	Units
DSE* ZC414	Optimization Methods for Analytics	5
DSE* ZC420	Data Visualization	3
DSE* ZC421	Ethics for Data Science	3
DSE* ZC426	Real Time Analytics	4
DSE* ZC444	Artificial Intelligence	3
DSE* ZG565	Machine Learning	4
DSE* ZG515	Data Warehousing	5
DSE* ZG517	Systems for Data Analytics	5
DSE* ZG521	Graphs – Algorithms and Mining	5
DSE* ZG522	Big Data Systems	5
DSE* ZG524	Deep Learning	4
DSE* ZG525	Natural Language Processing	3
DSE* ZG526	Probabilistic Graphical Models	4
DSE* ZG527	Advanced Topics in Data Processing	5
DSE* ZG537	Information Retrieval	4
DSE* ZG554	Distributed data systems	5
DSE* ZG555	Data visualization and Interpretation	5
DSE* ZG556	Stream Processing and Analytics	5
DSE* ZG557	Artificial and Computational Intelligence	5

Note: In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing collaborating organization.

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	DSE* ZC415	Data Mining	3	DSE* ZC413	Introduction to Statistical Methods	3
	DSE* ZC416	Mathematical Foundations for Data Science	4	DSE* ZG523	Introduction to Data Science	3
	DSE* ZG519	Data Structures and Algorithms Design	5		Elective-I	
	DSE* ZG516	Computer Organization and Systems Software	5		Elective-II	
		Total	17		Total	15 (min)
II		Elective-III		DSE* ZG628T	Dissertation	16
		Elective-IV				
		Elective-V				
		Elective-VI				
		Total	16 (min)		Total	16

M. Tech. Design Engineering

Curriculum Structure

Input Requirements

The students admitted to the four-semester M.Tech. Design Engineering must:

(i) hold an Integrated First Degree of BITS or its equivalent such as B.E. / B.Tech. in relevant disciplines, and

(ii) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards coursework, and

b) Dissertation (16 units)

The coursework requirement for the program would consist of a set of core courses and elective courses. The core course requirement is mandatory for all students in a given programme. Rest of the coursework must be completed through elective courses.

Programme Structure

Core Courses (5)

Course No.	Course Title	Units
DE* ZG512	Finite Element Methods	5
DE* ZG541	Product Design	5
DE* ZG561	Mechanisms and Robotics	5
DE* ZG611	Dynamics & Vibrations	5
DE* ZG631	Materials Technology & Testing	5

Pool of Electives (7)

Course No.	Course Title	Units
DE* ZC415	Introduction to MEMS	4
DE* ZG511	Mechatronics	5
DE* ZG513	Tribology	5
DE* ZG514	Fracture Mechanics	5
DE* ZG515	Computational Fluid Dynamics	5
DE* ZG521	World-Class Manufacturing	5
DE* ZG522	Advanced Composites	5
DE* ZG523	Project Management	4
DE* ZG525	Mechanical System Design	5
DE* ZG531	Concurrent Engineering	5
DE* ZG532	Quality Assurance and Reliability	5
DE* ZG535	Advanced Engineering Mathematics	5
DE* ZG542	Machine Tool Engineering	5

Course No.	Course Title	Units
DE* ZG544	Design for Additive Manufacturing	5
DE* ZG545	Advanced Control Engineering	5
DE* ZG546	Model Based System Design	5
DE* ZG548	Design for Industrial Internet of Things	5
DE* ZG612	Advanced Finite Element Modelling & Analysis	5
DE* ZG621	Computer Aided Analysis & Design	5
DE* ZG641	Theory of Elasticity and Plasticity	5

Note: In the above programme structure, the symbol * in the course numbers, can be substituted by the letters representing the collaborating organization

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	DE* ZG541	Product Design	5	DE* ZG512	Finite Element Methods	5
	DE* ZG631	Materials Technology & Testing	5	DE* ZG611	Dynamics & Vibrations	5
		Elective	4 (min)		Elective	4 (min)
		Elective	4 (min)		Elective	4 (min)
		Total	**18 (min)**		**Total**	**18 (Min)**
II	DE* ZG561	Mechanisms & Robotics	5	DE* ZG628T	Dissertation	16
		Elective	4 (min)			
		Elective	4 (min)			
		Elective	4 (min)			
		Total	**17 (min)**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Designed for the HRD needs of a diverse spectrum of Engineering Industries. Collaborating Organizations: SKF and John Deere, Pune

M.Tech. (Digital Manufacturing)

Input Requirements

The students admitted to the four-semester M.Tech. Digital Manufacturing must:

(i) hold a B.E. / B.Tech. degree in EEE/Instrumentation/Mechatronics relevant disciplines, and

(ii) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards course work and
b) Dissertation (16 units)

The course work requirement for the programme would consist of a set of core courses (7) and elective courses (at least 5). The core course requirement is mandatory for all students in the programme. Rest of the course work must be completed through elective courses.

Programme Structure

Core Courses

Course No	Course Title	Units
DM* ZC472	Precision Engineering	3
DM* ZG511	Mechatronics	5
DM* ZG521	Design for Additive Manufacturing	5
DM* ZG531	High Precision Manufacturing	4
DM* ZG612	Advances in Materials, Composites and Plastics	4
DM* ZG622	Industrial IoT	4
DM* ZG631	Additive Manufacturing Process	5

Electives

Course No	Course Name	Units
DM* ZC412	Flexible Manufacturing Systems	4
DM* ZG512	Embedded System Design	4
DM* ZG522	Behavioral Operations	4
DM* ZG532	Big Data Analytics in Manufacturing	4
DM* ZG533	Manufacturing Planning and Control	5
DM* ZG534	Sustainable Manufacturing	5
DM* ZG535	Cyber Security in Manufacturing	4
DM* ZG541	Product Design	5
DM* ZG561	Mechanisms and Robotics	5

M.Tech. (Digital Manufacturing)

Semester-wise Pattern

Year	Course No.	Course Title	U	Course No.	Course Title	U
I	**Semester I**			**Semester II**		
	DM* ZG511	Mechatronics	**5**	DM* ZC472	Precision Engineering	**3**
	DM* ZG521	Design for Additive Manufacturing	**5**	DM* ZG612	Advances in Materials, Composites and Plastics	**4**
	DM* ZG531	High Precision Manufacturing	**4**	DM* ZG622	Industrial IoT	**4**
		Elective – 1	**4 (min)**		Elective – 2	**4 (min)**
		Total	**18 (min)**		**Total**	**15 (min)**
II	**Semester III**			**Semester IV**		
	DM* ZG631	Additive Manufacturing Process	**5**	DM* ZG629T	Dissertation	**16**
		Elective – 3	**4 (min)**			
		Elective – 4	**4 (min)**			
		Elective – 5	**4 (min)**			
		Total	**17 (min)**		**Total**	**16**

M.Tech. Embedded Systems

Curriculum Structure

Input Requirements

The students admitted to the four-semester M.Tech. Embedded Systems must:

(i) Employed Professionals holding an Integrated First Degree of BITS or its equivalent such as B.E. / B.Tech. / M.Sc. in relevant disciplines, and

(ii) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards coursework, and

b) Dissertation (16 units)

The coursework requirement for the program would consist of a set of core courses and elective courses. The core course requirement is mandatory for all students in a given programme. Rest of the coursework must be completed through elective courses.

Programme Structure

Core Courses (4)

Course No.	Course Title	Units
ES* ZC424	Software for Embedded Systems	3
ES* ZG512	Embedded System Design	4
ES* ZG553	Real Time Systems	5
ES* ZG641	Hardware Software Co-Design	5

Pool of Electives (25)

Course No.	Course Title	Units
ES* ZC441	Robotics	3
ES* ZC446	Data Storage Technologies & Networks	3
ES* ZC481	Computer Networks	4
ES* ZG511	Mechatronics	5
ES* ZG513	Network Security	4
ES* ZG514	Mechanisms & Robotics	5
ES* ZG520	Wireless & Mobile Communication	5
ES* ZG523	Project Management	4
ES* ZG524	Real Time Operating Systems	5
ES* ZG525	Avionics Systems	5
ES* ZG526	Advanced Computer Networks	5
ES* ZG531	Pervasive Computing	4

Course No.	Course Title	Units
ES* ZG532	Testability for VLSI	5
ES* ZG545	Control & Instrumentation for Systems	5
ES* ZG554	Reconfigurable Computing	5
ES* ZG556	DSP Based Control of Electric Drives	3
ES* ZG571	Optical Communication	5
ES* ZG573	Digital Signal Processing	3
ES* ZG611	Advanced Control Systems	5
ES* ZG612	Fault Tolerant System Design	5
ES* ZG613	Advanced Digital Signal Processing	5
ES* ZG621	VLSI Design	5
ES* ZG625	Safety Critical Embedded System Design	4
ES* ZG642	VLSI Architecture	4
ES* ZG651	Networked Embedded Applications	4

Note: In the above programme structure, the symbol * in the course numbers, can be substituted by the letters representing the collaborating organization.

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	ES* ZG512	Embedded System Design	4	ES* ZC424	Software for Embedded System	3
	ES* ZG553	Real Time Systems	5		Elective	(3 min)
		Elective	(3 min)		Elective	(3 min)
		Elective	(3 min)		Elective	(3 min)
		Total	15 (min)		Total	12 (min)
II	ES* ZG641	Hardware Software Co-Design	5	ES* ZG628T	Dissertation	16
		Elective	(3 min)			
		Elective	(3 min)			
		Elective	(3 min)			
		Total	14 (min)		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Cisco, Bangalore; UTC Bangalore and Hyderabad

M.Tech. Environmental Engineering

Curriculum Structure

Input requirements

Employed Professionals with minimum one year work experience in Environmental Science / Engineering and allied areas holding an Integrated First Degree of BITS or its equivalent such as B.E / B.Tech / or M.Sc. in relevant disciplines (Chemistry, Chemical Engineering, Civil Engineering, Biology, Microbiology, Biotechnology, Mechanical Engineering) with adequate preparation in Mathematics.

Normal Duration: 4 Semesters

Core Courses (5)

Course No	Course Title	Units
EE* ZG511	Environmental Chemistry	5
EE* ZG512	Environmental Biotechnology	5
EE* ZG513	Applied Transport Phenomena	5
EE* ZG514	Environmental Sampling and Analytical Methods	5
EE* ZG515	Environmental Management Systems	5

Pool of Electives (10)

Course No	Course Title	Units
EE* ZG521	Physico – Chemical Treatment Principles & Design for Wastewater systems	4
EE* ZG522	Biological Treatment Principles & Design for Wastewater systems	4
EE* ZG523	Environmental Statistics	4
EE* ZG611	Energy Generation and Management in Waste Treatment Plants	4
EE* ZG612	Environmental Remote Sensing and GIS	4
EE* ZG613	Environmental Systems Modelling	4
EE* ZG614	Air Pollution Control Technologies	4
EE* ZG621	Solid Waste Management	4
EE* ZG622	Environmental Process Engineering	4
EE* ZG623	Environmental Impact and Risk Assessment	4

M.Tech. Environmental Engineering

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	EE* ZG511	Environmental Chemistry	5	EE* ZG512	Environmental Biotechnology	5
	EE* ZG515	Environmental Management Systems	5		Elective	(4 min)
		Elective	(4 min)		Elective	(4 min)
		Elective	(4 min)		Elective	(4 min)
Total			18 (min)	Total		17 (min)
II	EE* ZG513	Applied Transport Phenomena	5	EE* ZG628T	Dissertation	16
	EE* ZG514	Environmental Sampling and Analytical Methods	5			
		Elective	(4 min)			
		Elective	(4 min)			
Total			18 (min)	Total		16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Goa Pollution Control Board, Goa

M.Tech. Manufacturing Management

Curriculum Structure

Input Qualification

The students admitted to the four-semester M.Tech. in Manufacturing Management must:

(i) hold an Integrated First Degree of BITS or its equivalent such as B.E. / B.Tech. / M.Sc. in relevant disciplines, and

(ii) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards coursework, and

b) Dissertation (16 units)

The coursework requirement for the program would consist of a set of core courses and elective courses. The core course requirement is mandatory for all students in a given programme. Rest of the coursework must be completed through elective courses.

Programme Structure

Manufacturing Management Core (7)

Course No.	Course Title	Units
MM ZG515	Quantitative Methods	4
MM ZG522	Total Quality Management	4
MM ZG523	Project Management	4
MM ZG533	Manufacturing Planning and Control	5
MM ZG537	Lean Manufacturing	5
MM ZG541	Product Design	5
MM ZG621	Supply Chain Management	4

Pool of Electives (7)

Course No.	Course Title	Units
MM ZC412	Flexible Manufacturing Systems	4
MM ZC441	Human Resource Management *****	4
MM ZC472	Precision Engineering	3
MM ZG512	Manufacturing Strategy	4
MM ZG513	Maintenance Engineering	5
MM ZG514	Leadership and Managing Change *****	4
MM ZG534	Sustainable Manufacturing	4
MM ZG535	Decision Analysis	4
MM ZG539	Six Sigma	4
MM ZG611	Strategic Management & Business Policy *****	4
MM ZG627	Managerial Corporate Finance *****	4

Note: A student may be allowed to take upto 3 courses from among the specified management domain electives which are indicated by an '*****'.

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	MMZG533	Manufacturing Planning & Control	5	MMZG621	Supply Chain Management	4
	MMZG522	Total Quality Management	4	MMZG537	Lean Manufacturing	5
	MMZG515	Quantitative Methods	4	MMZG523	Project Management	4
	MMZG541	Product Design	5		Elective	4 (min)
		Total	18		Total	17(min)
II		Elective	4 (min)	MMZG628T	Dissertation	16
		Elective	4 (min)			
		Elective	4 (min)			
		Elective	4 (min)			
		Total	16(min)		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

M.Tech. Microelectronics

Curriculum Structure

Input Requirements

The students admitted to the four-semester M.Tech. Microelectronics must:

(iii) hold an Integrated First Degree of BITS or its equivalent such as B.E. / B.Tech. / M.Sc. in relevant disciplines, and

(iv) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards coursework, and

b) Dissertation (16 units)

The coursework requirement for the program would consist of a set of core courses and elective courses. The core course requirement is mandatory for all students in a given programme. Rest of the coursework must be completed through elective courses.

Programme Structure

Core Courses (5)

Course No.	Course Title	Units
MEL* ZG611	IC Fabrication Technology	5
MEL* ZG621	VLSI Design	5
MEL* ZG631	Physics & Modeling of Microelectronic Devices	5
MEL* ZG632	Analog IC Design	5
MEL* ZG641	CAD for IC Design	5

Pool of Electives (17)

Course No.	Course Title	Units
MEL* ZC415	Introduction to MEMS	4
MEL* ZG510	RF Microelectronics	5
MEL* ZG511	Design & Analysis of Algorithms	5
MEL* ZG512	Optoelectronic Devices, Circuit & Systems	5
MEL* ZG520	Wireless & Mobile Communication	5
MEL* ZG524	Real Time Operating Systems	5
MEL* ZG526	Embedded System Design	4
MEL* ZG531	Testability for VLSI	5
MEL* ZG553	Real Time Systems	5
MEL* ZG554	Reconfigurable Computing	5
MEL* ZG573	Digital Signal Processing	3
MEL* ZG613	Advanced Digital Signal Processing	5
MEL* ZG623	Advanced VLSI Design	5
MEL* ZG625	Advanced Analog and Mixed Signal Design	5
MEL* ZG642	VLSI Architecture	4
MEL* ZG651	Hardware Software Co-Design	5
MEL* ZG652	Networked Embedded Applications	4

Note: In the above programme structure, the symbol * in the course numbers, can be substituted by the letters representing the collaborating organization

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	MEL* ZG621	VLSI Design	5	MEL* ZG611	IC Fabrication Technology	5
	MEL* ZG631	Physics & Modeling of Microelectronic Devices	5	MEL* ZG632	Analog IC Design	5
		Elective	(4 min)	MEL* ZG641	CAD for IC Design	5
		Elective	(4 min)		Elective	(5 min)
		Total	18 (min)		Total	20 (min)
II		Elective	(4 min)	MEL*ZG628T	Dissertation	16
		Elective	5 (min)			
		Elective	5 (min)			
		Elective	5 (min)			
		Total	19 (min)		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating Organizations: Samsung, Gurgaon

Integrated M.Tech. Microelectronics

Normal Duration: Eight Semesters

Type of Input: The students admitted to the Integrated M.Tech. Microelectronics programme must:

(a) hold a B.Sc. degree or its equivalent in relevant disciplines with adequate coursework in Mathematics and Physics

(b) be employed professionals with minimum one-year work experience in relevant domains.

Curriculum structure

Foundation Courses: (6)

Type of foundation	Course No.	Course Title	Units
Mathematics Foundation	MEL* ZC234	Linear Algebra and Optimization	3
	MEL* ZC222	Discrete Structures for Computer Science	3
	MEL* ZC111	Probability & Statistics	3
Engineering Foundation	MEL* ZC112	Electrical Sciences	3
	MEL* ZC411	Signals and Systems	3
Technical Arts/Professional Course	MEL* ZC164	Computer Programming	4

Core Courses: (13)

Course No.	Course Title	Units
MEL* ZC215	Digital Design	4
MEL* ZC363	Data Structures and Algorithms	4
MEL* ZC321	Control Systems	3
MEL* ZC244	Microelectronic Circuits	3
MEL* ZC241	Microprocessor and Interfacing	4
MEL* ZC364	Analog Electronics	4
MEL* ZC342	Computer Architecture	4
MEL* ZG573	Digital Signal Processing	3
MEL* ZG621	VLSI Design	5
MEL* ZG631	Physics & Modeling of Microelectronic Devices	5
MEL* ZG611	IC Fabrication Technology	5
MEL* ZG632	Analog IC Design	5
MEL* ZG641	CAD for IC Design	5

Pool of Electives: (22)

Course No.	Course Title	Units
3rd and 4th level courses		
MEL* ZC464	Machine Learning	3
MEL* ZC382	Communication Systems	4
MEL* ZC214	Electronic Devices	3
MEL* ZC444	Artificial Intelligence	3
MEL* ZC415	Introduction to MEMS	4
MEL* ZC477	Modeling of Field Effect Nano-Devices	3
5th and 6th level courses		
MEL* ZG510	RF Microelectronics	5
MEL* ZG511	Design & Analysis of Algorithms	5
MEL* ZG512	Optoelectronic Devices, Circuit & Systems	5
MEL* ZG520	Wireless & Mobile Communication	5
MEL* ZG526	Embedded System Design	4
MEL* ZG531	Testability for VLSI	5
MEL* ZG553	Real Time Systems	5
MEL* ZG554	Reconfigurable Computing	5
MEL* ZG613	Advanced Digital Signal Processing	5
MEL* ZG623	Advanced VLSI Design	5
MEL* ZG625	Advanced Analog and Mixed Signal Design	5
MEL* ZG642	VLSI Architecture	4
MEL* ZG651	Hardware Software co-Design	5
MEL* ZG656	Networked Embedded Applications	4
MEL* ZG626	High-Speed Signaling: Jitter Modeling, Analysis, and Budgeting	4
MEL* ZG627	Power Integrity Analysis and Management for Integrated Circuits	4

Integrated M.Tech. Microelectronics

Semester wise Pattern

Year	Course No.	Course Title	U	Course No.	Course Title	U
		Semester I			**Semester II**	
I	MEL* ZC234	Linear Algebra and Optimization	**3**	MEL* ZC111	Probability & Statistics	**3**
	MEL* ZC112	Electrical Sciences	**3**	MEL* ZC215	Digital Design	**4**
	MEL* ZC164	Computer Programming	**4**	MEL* ZC363	Data Structures and Algorithm	**4**
	MEL* ZC222	Discrete Structures for Computer Science	**3**	MEL* ZC321	Control Systems	**3**
		Total	**13**		**Total**	**14**
		Semester III			**Semester IV**	
II	MEL* ZC244	Microelectronic Circuits	**3**	MEL* ZC364	Analog Electronics	**4**
	MEL* ZC411	Signals & Systems	**3**	MEL* ZG573	Digital Signal Processing	**3**
	MEL* ZC241	Microprocessor and Interfacing	**4**	MEL* ZC342	Computer Architecture	**4**
		Elective	**3 (min)**		Elective	**3 (min)**
		Total	**13 (min)**		**Total**	**14 (min)**
		Semester V			**Semester VI**	
III	MEL* ZG621	VLSI Design	**5**	MEL* ZG632	Analog IC Design	**5**
	MEL* ZG631	Physics & Modeling of Microelectronic Devices	**5**	MEL* ZG641	CAD For IC Design	**5**
	MEL* ZG611	IC Fabrication Technology	**5**		Elective	**3 (min)**
		Elective	**3 (min)**		Elective	**3 (min)**
		Total	**18 (min)**		**Total**	**16(min)**
		Semester VII			**Semester VIII**	
IV		Elective	**3 (min)**	MEL* ZG628T	Dissertation	**16**
		Elective	**3 (min)**			
		Elective	**4 (min)**			
		Elective	**4 (min)**			
		Total	**14 (min)**		**Total**	**16**

Note: In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

M.Tech. Pharmaceutical Operations and Management

Curriculum Structure

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent, with minimum one-year work experience in relevant domains.

Normal Duration: Four Semesters

Core Courses

Course No.	Course Title	Units
POM* ZG534	Advanced Pharmaceutical Technology	5
POM* ZG515	Pharmaceutical Administration and Management	5
POM* ZG525	Pharmaceutical Process Development and Scale-up	4
POM* ZG522	Quality Assurance and Regulatory Affairs	5

Pool of Electives

Course No.	Course Title	Units
POM* ZG551	Advanced Physical Pharmaceutics	5
POM* ZG511	Disinfection and Sterilization	4
POM* ZG512	Dosage Form Design	5
POM* ZG513	Financial Management	4
POM* ZC441	Human Resource Management	4
POM* ZG545	Intellectual Property Rights and Pharmaceuticals	3
POM* ZC471	Management Information Systems	3
POM* ZG531	Manufacturing Organization and Management	5
POM* ZG541	Modern Analytical Techniques	4
POM* ZG542	Production and Operations Management	4
POM* ZG523	Project Management	4
POM* ZG521	Statistical Process Control	5
POM* ZG611	Strategic Management & Business policy	5
POM* ZG621	Supply Chain Management	4
POM* ZG631	TQM Tools and Techniques	5

Dissertation

Course No.	Course Title	Units
POM*ZG628T	Dissertation	16

M.Tech. Pharmaceutical Operations and Management

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	POM*ZG515	Pharmaceutical Administration and Management	5	POM*ZG534	Advanced Pharmaceutical Technology	5
	POM*ZG522	Quality Assurance & Regulatory Affairs	5		Elective	(5 min)
		Elective	(5 min)		Elective	(3 min)
		Elective	(5 min)		Elective	(3 min)
Total			20 (min)	Total		16 (min)
II	POM*ZG525	Pharmaceutical Process Development & Scale-up	4	POM* ZG628T	Dissertation	16
		Elective	(4 min)			
		Elective	(4 min)			
		Elective	(5 min)			
Total			17 (min)	Total		16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Designed for the HRD needs of a diverse spectrum of Pharmaceutical Industries. Collaborating Organizations: Lupin, Mumbai; Sun Pharmaceutical Industries, Vadodara

M.Tech. in Quality Management
Curriculum Structure

Input Qualification

The students admitted to the four-semester M.Tech. in Quality Management must:

I. hold an Integrated First Degree of BITS or its equivalent such as B.E. / B.Tech. / M.Sc. in relevant disciplines, and

II. be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: 4 Semesters

Curriculum Requirements:

Completion of the programme would require

a) At least 12 courses (totaling at least 48 units) towards coursework, and

b) Dissertation (16 units)

The coursework requirement for the program would consist of a set of core courses and elective courses. The core course requirement is mandatory for all students in a given programme. Rest of the coursework must be completed through elective courses.

Programme Structure

Quality Management Core (7)

Course No.	Course Title	Units
QM ZG515	Quantitative Methods	4
QM ZG523	Project Management	4
QM ZG524	Quality Management Systems	5
QM ZG526	Operations Management	5
QM ZG528	Reliability Engineering	5
QM ZG531	Statistical Quality Control	5
QM ZG532	Total Quality Management	4

Pool of Electives(7)

Course No.	Course Title	Units
QM ZC441	Human Resource Management	4
QM ZG514	Leadership & Managing Change	4
QM ZG535	Decision Analysis	4
QM ZG536	Design of Experiments	4
QM ZG611	Strategic Management & Business Policy	4
QM ZG621	Supply Chain Management	4
QM ZG661	Software Quality Management	4
QM ZG663	Concurrent Engineering	5
QM ZC472	Precision Engineering	3
QM ZG539	Six Sigma	4

Project

Course No.	Course Title	Units
BITS ZG628T	Dissertation	16

M.Tech. in Quality Management

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	QM ZG524	Quality Management Systems	5	QM ZG531	Statistical Quality Control	5
	QM ZG532	Total Quality Management	4	QM ZG526	Operations Management	5
	QM ZG515	Quantitative Methods	4	QM ZG523	Project Management	4
	QM ZG528	Reliability Engineering	5		Elective	(4 min)
		Total	18		Total	18 (min)
II		Elective	(4 min)	QM ZG628T	Dissertation	16
		Elective	(4 min)			
		Elective	(4 min)			
		Elective	(4 min)			
		Total	16 (min)		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

M.Tech. (Sanitation Science, Technology and Management)

Type of Input: Integrated First degree of BITS or its equivalent in the areas of Civil / Chemical Engineering, or an M.Sc. in Chemistry / Biology / Environmental Science with minimum one year of work experience in relevant domains. Exceptions can be made if a candidate's first degree is outside the above mentioned fields, but has substantial experience in the field of sanitation.

Nominal Duration: Four Semesters

Programme Structure:

Core Courses

Course No.	Course Title	Units
SSTM* ZG511	Sanitation Technology	5
SSTM* ZG512	Sanitation and Public Health	5
SSTM* ZG513	Sanitation Governance, Behavioral Change and Advocacy	5
SSTM* ZG514	Sanitation Financing & Project management	5
SSTM* ZG515	Emergency Sanitation & Leadership	5
SSTM* ZG516	Environmental Sampling and Analytical Methods	5

Pool of Electives

Course No.	Course Title	Units
SSTM* ZG521	Environmental Chemistry	5
SSTM* ZG522	Environmental Biotechnology	5
SSTM* ZG523	Biological Treatment Principles and Design of Waste Water Systems	4
SSTM* ZG524	Environmental Statistics	4
SSTM* ZG525	Environmental Systems Modelling	4
SSTM* ZG526	Solid Waste Management	4
SSTM* ZG527	Environmental Management Systems	5
SSTM* ZG528	Environmental Impact and Risk Assessment	4

Dissertation

Course No.	Course Title	Units
SSTM* ZG628T	Dissertation	16

M.Tech. (Sanitation Science, Technology and Management)

Semesterwise pattern

Year	First Semester			Second Semester		
	Course No.	**Course Title**	**Units**	**Course No.**	**Course Title**	**Units**
I	SSTM* ZG511	Sanitation Technology	5	SSTM* ZG514	Sanitation Financing & Project Management	5
	SSTM* ZG512	Sanitation and Public Health	5	SSTM* ZG515	Emergency Sanitation & Leadership	5
		Elective I	4 to 5	SSTM* ZG516	Environmental Sampling and Analytical Methods	5
		Elective II	4 to 5		Elective III	4 to 5
	Total		18-20	Total		19-20
II	SSTM* ZG513	Sanitation Governance, Behavioral Change and Advocacy	5	SSTM* ZG628T	Dissertation	16
		Elective IV	4/5			
		Elective V	4/5			
		Elective VI	4/5			
	Total		17/20	Total		16

M.Tech. Software Engineering (4-semester)
Curriculum Structure

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent, with minimum one-year work experience in relevant domains.

Normal Duration: Four Semesters

Core Courses (5)

Course No.	Course Title	Units
SE* ZG527	Cloud Computing	5
SE* ZG544	Agile Software Processes	4
SE* ZG552	Software Testing Methodologies	4
SE* ZG651	Software Architectures	5
SE* ZG685	Software Product Management	5

Pool of Electives (25)

Course No.	Course Title	Units
SE* ZC420	Data Visualization	3
SE* ZC425	Data Mining	3
SE* ZC444	Artificial Intelligence	3
SE* ZG512	Object Oriented Analysis and Design #	4
SE* ZG514	Introduction to DevOps #	4
SE* ZG515	Data Warehousing	5
SE* ZG516	Embedded System Design	4
SE* ZG518	Database Design & Applications	5
SE* ZG519	Data Structures & Algorithm Design	5
SE* ZG522	Big Data Systems	5
SE* ZG528	Cyber Physical Systems	4
SE* ZG533	Service Oriented Computing #	4
SE* ZG547	Usability Engineering	5
SE* ZG566	Secure Software Engineering	5
SE* ZG568	Applied Machine Learning	4
SE* ZG569	Blockchain Technologies & Systems	4
SE* ZG583	Scalable Services #	5
SE* ZG585	Cross Platform Application Development #	4
SE* ZG586	Edge Computing #	5
SE* ZG587	Open Source Software Engineering #	4
SE* ZG589	Middleware Technologies	4
SE* ZG622	Software Project Management #	4
SE* ZG626	Hardware Software Co-Design	5
SE* ZG661	Software Quality Management #	4
SE* ZG681	Cyber Security	4

Requirements: At least 4 courses / 16 units (min) from among those restricted electives marked with a '#' must be chosen as electives.

Semesterwise Pattern

Year	Semester I		U	Semester II		U
I	SE* ZG651	Software Architectures	5	SE* ZG685	Software Product Management	5
	SE* ZG527	Cloud Computing	5	SE* ZG552	Software Testing Methodologies	4
	SE* ZG544	Agile Software Processes	4		Elective	3(min)
		Elective	3(min)		Elective	4(min)
		Total	**17(min)**		**Total**	**16(min)**
II		Elective	3(min)	SE*ZG628T	Dissertation	16
		Elective	4(min)			
		Elective	4(min)			
		Elective	4(min)			
		Total	**15(min)**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating organizations: Wipro Technologies, Dell,SAP Labs, Sabre,EMC, Oracle, Bangalore; Avaya, Tech Mahindra, Pune; Capgemini, Mumbai; Qualcomm, Hyderabad

Integrated M.Tech. Software Engineering

Curriculum Structure

Input Qualification

The students admitted to the **Integrated M.Tech. Software Engineering** programme must:

i. hold a B.Sc. / BCA degree or its equivalent in relevant disciplines with adequate background in Mathematics, and

(iii) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: Eight semesters

Programme Structure:

Foundation Courses

Category	Course No.	Course Title	Units
Mathematics Foundation	SE* ZC234	Linear Algebra & Optimization $	3
	SE *ZC111	Probability and Statistics $	3
	SE *ZC222	Discrete Structures for Computer Science $	3
Engineering Foundation	SE *ZC263	Digital Electronics and Microprocessors $	4
Technical Arts / Professional Courses	SE *ZC241	Principles of Management	3
	SE *ZC312	Technical Report Writing	3
	SE *ZC163	Computer Programming $	4

$ Mandatory Foundation Courses

Core Courses (14)

Course No.	Course Title	Units
SE* ZC313	Object Oriented Programming & Design	4
SE* ZC333	Systems Programming	4
SE* ZC337	Database Systems & Applications	4
SE* ZC344	Software Engineering	4
SE* ZC353	Computer Organization & Architecture	4
SE* ZC363	Data Structures & Algorithms	4
SE* ZC364	Operating Systems	4
SE* ZC373	Compiler Design	4
SE* ZC467	Computer Networks	4
SE* ZG527	Cloud Computing	5
SE* ZG544	Agile Software Processes	4
SE* ZG552	Software Testing Methodologies	4
SE* ZG651	Software Architectures	5
SE* ZG685	Software Product Management	5

Pool of Electives:

Course No.	Course Title	Units
SE* ZC420	Data Visualization	3
SE* ZC425	Data Mining	3
SE* ZC444	Artificial Intelligence	3
SE* ZC472	Computer Graphics	3
SE* ZG512	Object Oriented Analysis & Design #	4
SE* ZG514	Introduction to DevOps #	4
SE* ZG515	Data Warehousing	5
SE* ZG516	Embedded System Design	4
SE* ZG518	Database Design & Applications	5
SE* ZG519	Data Structures & Algorithm Design	5
SE* ZG522	Big Data Systems	5
SE* ZG528	Cyber Physical Systems	4
SE* ZG533	Service Oriented Computing #	4
SE* ZG547	Usability Engineering	5
SE* ZG566	Secure Software Engineering	5
SE* ZG568	Applied Machine Learning	4
SE* ZG569	Blockchain Technologies & Systems	4
SE* ZG583	Scalable Services #	5
SE* ZG585	Cross Platform Application Development #	4
SE* ZG586	Edge Computing #	5
SE* ZG587	Open Source Software Engineering #	4
SE* ZG589	Middleware Technologies	4
SE* ZG622	Software Project Management #	4
SE* ZG626	Hardware Software Co-Design	5
SE* ZG661	Software Quality Management #	4
SE* ZG681	Cyber Security	4

Requirements: At least 4 courses / 16 units (min) from among those restricted electives marked with a '#' must be chosen as electives.

Integrated M.Tech. Software Engineering

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	SE* ZC222	Discrete Structures for Computer Science	3	SE* ZC313	Object Oriented Programming & Design	4
	SE* ZC234	Linear Algebra & Optimization	3	SE* ZC333	Systems Programming	4
	SE* ZC163	Computer Programming	4	SE* ZC353	Computer Organization & Architecture	4
	SE* ZC263	Digital Electronics & Microprocessors	4	SE* ZC363	Data Structures & Algorithms	4
		Total	14	Total		16
II	SE* ZC111	Probability & Statistics	3	SE* ZC373	Complier Design	4
	SE* ZC337	Database Systems & Applications	4	SE* ZC344	Software Engineering	4
	SE* ZC364	Operating Systems	4	SE* ZC467	Computer Networks	4
		Elective	3 (Min)		Elective	3(Min)
		Total	14(Min)	Total		15(Min)
III	SE* ZG651	Software Architectures	5	SE* ZG685	Software Product Management	5
	SE* ZG527	Cloud Computing	5	SE* ZG552	Software Testing Methodologies	4
		Elective	3(min)		Elective	3(min)
		Elective	3(min)		Elective	3(min)
		Total	16(min)	Total		15(min)
IV	SE* ZG544	Agile Software Processes	4	SE* ZG628T	Dissertation	16
		Elective	3(min)			
		Elective	3(min)			
		Elective	3(min)			
		Total	13(min)	Total		16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborating organizations: Wipro Technologies, Dell, SAP Labs, Sabre, EMC, Oracle, Bangalore; Avaya,Tech Mahindra, Pune; Capgemini, Mumbai; Qualcomm, Hyderabad

M.Tech. Software Systems (4-semester) with specializations

Curriculum Structure

Input Requirements
Employed professionals holding an Integrated First Degree of BITS or its equivalent in relevant disciplines, with minimum one-year work experience in relevant domains.

Normal duration: Four semesters

Programme Structure

Core Courses

Course No.	Course Title	Units
SS* ZG518	Database Design & Applications *	5
SS* ZG519	Data Structures & Algorithms Design *	5
SS* ZG526	Distributed Computing	5
SS* ZG653	Software Architectures	5

* Dean, WILP may be permitted the operational flexibility of substituting these courses with others from the elective pool(s) based on certain input criteria.

General Pool of Electives

Course No.	Course Title	Units
SS* ZC444	Artificial Intelligence	3
SS* ZG514	Object Oriented Analysis & Design	4
SS* ZG516	Computer Organization and Software Systems	5
SS* ZG547	Usability Engineering	5
SS* ZG554	Distributed Data Systems	5
SS* ZG562	Software Engineering and Management	5

Specialization for M.Tech. Software Systems

i) Pool of courses for Specialization 1: Networks and Cloud

Course No.	Course Title	Units
SS* ZC446	Data Storage Technologies and Networks	3
SS* ZC462	Network Programming	3
SS* ZC467	Computer Networks #	4
SS* ZG513	Network Security	4
SS* ZG520	Wireless and Mobile Communication	5
SS* ZG522	Design and Operation of Data Centres	5
SS* ZG525	Advanced Computer Networks	5
SS* ZG527	Cloud Computing #	5
SS* ZG578	Mobile Networks	4
SS* ZG580	Software Defined Networks	5

Course No.	Course Title	Units
SS* ZG586	Edge Computing	5
SS* ZG589	Middleware Technologies	4

Requirements:

- 5 courses / 19 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

ii) Pool of courses for Specialization 2: Security

Course No.	Course Title	Units
SS* ZC463	Cryptography	3
SS* ZG513	Network Security	4
SS* ZG566	Secure Software Engineering	5
SS* ZG567	AI and ML Techniques in Cyber Security	5
SS* ZG569	Blockchain Technologies & Systems	4
SS* ZG570	Cloud, IoT and Enterprise Security	5
SS* ZG575	Ethical Hacking	3
SS* ZG576	Identity and Access Management Technologies	4
SS* ZG588	Cyber Crimes, Forensics and Incident Handling	4
SS* ZG681	Cyber Security#	4

Requirements:

- 5 courses / 18 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

iii) Pool of courses for Specialization 3: Internet of Things

Course No.	Course Title	Units
SS* ZG512	Embedded Systems Design#	4
SS* ZG527	Cloud Computing	5
SS* ZG528	Cyber Physical Systems#	4
SS* ZG556	Stream Processing and Analytics	5
SS* ZG584	Data Management for IoT	5
SS* ZG574	Embedded Network Security	4
SS* ZG585	Cross Platform Application Development	4
SS* ZG656	Networked Embedded Applications	4

Requirements:

- 5 courses / 20 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

iv) Pool of courses for Specialization 4: Data Analytics

Course No.	Course Title	Units
SS* ZC416	Mathematical Foundations for Data Science #	4
SS* ZC425	Data Mining	3
SS* ZG515	Data Warehousing	5
SS* ZG529	Deep Learning	4
SS* ZG530	Natural Language Processing	3
SS* ZG536	Advanced Statistical Techniques for Analytics	4
SS* ZG537	Information Retrieval	4
SS* ZG568	Applied Machine Learning	4
SS* ZG577	Metaheuristics for Optimization	4

Requirements:

- 5 courses / 18 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

v) Pool of courses for Specialization 5: Embedded Systems

Course No.	Course Title	Units
SS* ZC427	Software for Embedded Systems	4
SS* ZG512	Embedded System Design #	4
SS* ZG553	Real Time Systems	5
SS* ZG579	Real Time Scheduling	4
SS* ZG626	Hardware Software Co-Design	5
SS* ZG656	Networked Embedded Applications	4
SS* ZG682	Embedded Middleware Design	5
SS* ZG683	Fault Tolerant Embedded System	4
SS* ZG684	Parallel Embedded Architectures	4

Requirements:

- 5 courses / 20 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

Semesterwise pattern

Year	Semester I		U	Semester II		U
I	SS* ZG519	Data Structures & Algorithms Design	5	SS* ZG653	Software Architectures	5
	SS* ZG518	Database Design & Applications	5	Elective 2		3(min)
	SS* ZG526	Distributed Computing	5	Elective 3		3(min)
	Elective 1		3(min)	Elective 4		4(min)
	Total		**18(min)**	**Total**		**15 (min)**
II	Elective 5		3(min)	SS* ZG628T	Dissertation	16
	Elective 6		3(min)			
	Elective 7		4(min)			
	Elective 8		4(min)			
	Total		**14(min)**	**Total**		**16**

Designed for the HRD requirements of a diverse spectrum of IT Industries. Collaborative Organizations: Wipro Technologies, Bangalore; TCS, Hyderabad; Cisco, Bangalore; Samsung , Gurgaon

Integrated M.Tech. Software Systems

Curriculum Structure

Input Qualification

The students admitted to the **M.Tech. Software Systems (8 Semesters)** programme must:

i) hold a B.Sc. / BCA degree or its equivalent in relevant disciplines with adequate background in Mathematics, and

ii) be employed professionals with minimum one-year work experience in relevant domains.

Normal Duration: Eight semesters

Programme Structure

Foundation Courses

Category	Course No.	Course Title	Units
Mathematics Foundation	SS* ZC234	Linear Algebra & Optimization $	3
	SS* ZC111	Probability and Statistics $	3
	SS* ZC222	Discrete Structures for Computer Science $	3
Engineering Foundation	SS* ZC263	Digital Electronics and Microprocessors $	4
Technical Arts / Professional Courses	SS* ZC241	Principles of Management	3
	SS* ZC312	Technical Report Writing	3
	SS* ZC163	Computer Programming $	4

$ Mandatory Foundation Courses

Core courses (12)

Course No.	Course Title	Units
SS* ZC313	Object Oriented Programming & Design	4
SS* ZC327	Systems Programming	4
SS* ZC328	Software Testing	3
SS* ZC337	Database Systems & Applications	4
SS* ZC343	Software Engineering	4
SS* ZC353	Computer Organization & Architecture	4
SS* ZC363	Data Structures & Algorithms	4
SS* ZC364	Operating Systems	4
SS* ZC373	Compiler Design	4
SS* ZC467	Computer Networks	4
SS* ZG526	Distributed Computing	5
SS* ZG653	Software Architectures	5

General Pool of Electives

Course No.	Course Title	Units
SS* ZC444	Artificial Intelligence	3
SS* ZG514	Object Oriented Analysis & Design	4
SS* ZG516	Computer Organization and Software Systems	5
SS* ZG547	Usability Engineering	5
SS* ZG554	Distributed Data Systems	5
SS* ZG562	Software Engineering and Management	5

Specialization for M.Tech. Software Systems (8 semesters)

i) Pool of courses for Specialization 1: Networks and Cloud

Course No.	Course Title	Units
SS* ZC446	Data Storage Technologies and Networks	3
SS* ZC462	Network Programming	3
SS* ZC467	Computer Networks #	4
SS* ZG513	Network Security	4
SS* ZG520	Wireless and Mobile Communication	5
SS* ZG522	Design and Operation of Data Centres	5
SS* ZG525	Advanced Computer Networks	5
SS* ZG527	Cloud Computing #	5
SS* ZG578	Mobile Networks	4
SS* ZG580	Software Defined Networks	5
SS* ZG586	Edge Computing	5
SS* ZG589	Middleware Technologies	4

Requirements:
- 5 courses / 19 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

ii) Pool of courses for Specialization 2: Security

Course No.	Course Title	Units
SS* ZC463	Cryptography	3
SS* ZG513	Network Security	4
SS* ZG566	Secure Software Engineering	5
SS* ZG567	AI and ML Techniques in Cyber Security	5
SS* ZG569	Blockchain Technologies & Systems	4
SS* ZG570	Cloud, IoT and Enterprise Security	5
SS* ZG575	Ethical Hacking	3
SS* ZG576	Identity and Access Management Technologies	4
SS* ZG588	Cyber Crimes, Forensics and Incident Handling	4
SS* ZG681	Cyber Security#	4

Requirements:
- 5 courses / 18 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

iii) Pool of courses for Specialization 3: Internet of Things

Course No.	Course Title	Units
SS* ZG512	Embedded Systems Design#	4
SS* ZG527	Cloud Computing	5
SS* ZG528	Cyber Physical Systems#	4
SS* ZG556	Stream Processing and Analytics	5
SS* ZG584	Data Management for IoT	5
SS* ZG574	Embedded Network Security	4
SS* ZG585	Cross Platform Application Development	4
SS* ZG656	Networked Embedded Applications	4

Requirements:

- 5 courses / 20 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

iv) Pool of courses for Specialization 4: Data Analytics

Course No.	Course Title	Units
SS* ZC416	Mathematical Foundations for Data Science #	4
SS* ZC425	Data Mining	3
SS* ZG515	Data Warehousing	5
SS* ZG529	Deep Learning	4
SS* ZG530	Natural Language Processing	3
SS* ZG536	Advanced Statistical Techniques for Analytics	4
SS* ZG537	Information Retrieval	4
SS* ZG568	Applied Machine Learning	4
SS* ZG577	Metaheuristics for Optimization	4

Requirements:

- 5 courses / 18 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

v) Pool of courses for Specialization 5: Embedded Systems

Course No.	Course Title	Units
SS* ZC427	Software for Embedded Systems	4
SS* ZG512	Embedded System Design #	4
SS* ZG553	Real Time Systems	5
SS* ZG579	Real Time Scheduling	4
SS* ZG626	Hardware Software Co-Design	5
SS* ZG656	Networked Embedded Applications	4
SS* ZG682	Embedded Middleware Design	5
SS* ZG683	Fault Tolerant Embedded System	4
SS* ZG684	Parallel Embedded Architectures	4

Requirements:

- 5 courses / 20 units (min) are to be chosen from the designated pool of courses for this specialization.
- # indicates mandatory course for this specialization. Other courses form the pool of electives.

Integrated M.Tech. Software Systems

Semesterwise Pattern

Year	First Semester		Units	Second Semester		Units
I	SS* ZC222	Discrete Structures for Computer Science	3	SS* ZC313	Object Oriented Programming & Design	4
	SS* ZC234	Linear Algebra & Optimization	3	SS* ZC327	Systems Programming	4
	SS* ZC163	Computer Programming	4	SS* ZC353	Computer Organization & Architecture	4
	SS* ZC263	Digital Electronics & Microprocessors	4	SS* ZC363	Data Structures & Algorithms	4
		Total	14		Total	16
II	SS* ZC111	Probability & Statistics	3	SS* ZC373	Complier Design	4
	SS* ZC337	Database Systems & Applications	4	SS* ZC343	Software Engineering	4
	SS* ZC364	Operating Systems	4	SS* ZC481	Computer Networks	4
		Elective	3 (Min)	SS*ZC328	Software Testing	3
		Total	14(Min)		Total	15
III	SS* ZG526	Distributed Computing	5	SS*ZG653	Software Architectures	5
		Elective	3(min)		Elective	3(min)
		Elective	4(min)		Elective	4(min)
		Elective	4(min)		Elective	4(min)
		Total	16(min)		Total	16(min)
IV		Elective	4(min)	SS* ZG628T	Dissertation	16
		Elective	4(min)			
		Elective	4(min)			
		Elective	4(min)			
		Total	16(min)		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

Designed for the HRD requirements of a diverse spectrum of IT Industries. Collaborative Organizations: Wipro Technologies, Bangalore; TCS, Hyderabad; Cisco, Bangalore; Samsung, Gurgaon

M.Tech. Systems Engineering

Curriculum Structure

Input Requirements

Employed professionals holding an Integrated First Degree of BITS or its equivalent in relevant disciplines, with minimum one-year work experience in relevant domains.

Normal duration : Four Semesters

Programme Structure

Core Courses : None.

Pool of Electives

Course No.	Course Title	Units
SE* ZG527	Cloud Computing	5
SE* ZC425	Data Mining	3
SE*ZC446	Data Storage Technologies & Networks	3
SE*ZG514	Data Warehousing	5
SE* ZC451	Internetworking Technologies	3
SE*ZC473	Multimedia Computing	3
SE*ZC462	Network Programming	3
SE*ZG513	Network Security	4
SE* ZG512	Object Oriented Analysis & Design	4
SE* ZG531	Pervasive Computing	4
SE* ZG524	Real Time Operating Systems	5
SE* ZG548	Advanced Data Mining	4
SE* ZG553	Real Time Systems	5
SE* ZG622	Software Project Management	4
SE* ZG661	Software Quality Management	4
SE* ZG552	Software Testing Methodologies	4
SE* ZG582	Telecom Network Management	5
SE* ZG520	Wireless & Mobile Communication	5

Note: In the above programme, the symbol '*' in the course numbers, can be substituted by the letters representing the collaborating organization.

M.Tech. Systems Engineering

Semesterwise Pattern

Year	First Semester		U	Second Semester		U
I	SE* ZG514	Data Warehousing	5	SE* ZG661	Software Quality Management	4
	SE* ZG512	Object Oriented Analysis & Design	4	SE* ZG531	Pervasive Computing	4
	SE* ZG524	Real Time Operating Systems	5	SE* ZC425	Data Mining	3
	SE* ZG520	Wireless & Mobile Communication	5	SE* ZG552	Software Testing Methodologies	4
		Total	19		Total	15
II	SE* ZG622	Software Project Management	4	SE* ZG628T	Dissertation	16
	SE* ZG527	Cloud Computing	5			
	SE* ZG582	Telecom Network Management	5			
	SE* ZG513	Network Security	4			
		Total	18		Total	16

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

Collaborative Organizations: Wipro Infotech, Bangalore

MBA programmes

Input Qualification:

The students admitted to the proposed four-semester MBA programs must:

(i) hold an Integrated First Degree of BITS or its equivalent and

(ii)be employed professionals with adequate work experience in relevant domains.

Curriculum Requirements for MBA programs

The nature of the input to these programs and the objectives / orientation of Work Integrated Learning Programs are different from those of the on-campus programs. Students interested in these programs are seeking continuing higher management education and focus in the chosen technical domain of study, which would enable their career progression within their industry. It is also to be observed that learning and coursework in these programs are integrated within a professional / technical environment.

Based on these facts and observations the curriculum has been designed to be in strong alignment with on-campus program at the core but with sufficient flexibility for customization to meet specific requirements of a target student population.

Completion of the program would require:

(i) At least 13 courses (totaling at least 52 units) towards coursework, and

(ii) Project (12 units).

The Department concerned may identify 4 to 8 courses out of the coursework requirement for each program as the **Management Core** requirement, and 4 to 6 courses of the coursework requirement for each program as the **Domain Core** requirement. The core requirements are mandatory for all students in a given program. However in certain highly specialized areas, some variation in the core requirements may be permitted. Rest of the coursework must be completed through elective courses.

The curriculum requirements common to all MBA programs is given below:

Category	No. of Units Required	No. of Courses Required
Management Core	24-40	6-8
Domain Core	16-25	4-6
Electives	3-15	1-3
Subtotal	52 (min)	13 (min)
Project	12	1
Total	64 (min)	14 (min)

Project: As Project is based on the work environment of the student, the number of units for Project may be kept as 12. Normally, the Project is to be undertaken in the final semester of the program.

MBA in Business Analytics

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M.Sc. in relevant disciplines, with minimum one year work experience in relevant domains
(OR)
Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.

Nominal Duration: Four Semesters

Curriculum Requirements:

Completion of the programme would require:

(a) At least 14 courses (totaling minimum of 56 units) towards course work, and

(b) Project (8 Units)

Programme Structure:

Management Core (8 Courses)

Course No.	Course Title	Units
MBA* ZC411	Marketing	4
MBA* ZC415	Financial and Management Accounting	4
MBA* ZC416	Managerial Economics	4
MBA* ZC417	Quantitative Methods	4
MBA* ZG511	Managing People & Organizations	4
MBA* ZG521	Financial Management	4
MBA* ZG526	Operations Management	4
MBA* ZG611	Strategic Management and Business Policy	4

Business Analytics Core (4 Courses)

Course No.	Course Title	Units
MBA* ZC413	Analytics for Competitive Advantage	4
MBA* ZG512	Predictive Analytics	4
MBA* ZG536	Foundations of Data Science	4
MBA* ZG538	Advanced Statistical Methods	4

Pool of Electives

Course No.	Course Title	Units
MBA* ZG517	Financial Analytics	4
MBA* ZG523	Project Management	4
MBA* ZG539	Data Visualization and Communication	4
MBA* ZG563	Analytics for HR	4

Course No.	Course Title	Units
MBA* ZG564	Models in Marketing	4
MBA* ZG565	Supply Chain Analytics	4
MBA* ZG566	Analytics for Marketing	4
MBA* ZG567	Analytics for Retail Industry	4
MBA* ZG568	Operations Research Models	4
MBA* ZG569	Analytics for Investment Banking	4
MBA* ZG570	Financial Risk Models	4
MBA* ZG571	Analytical Models in Finance	4

Project

Course No.	Course Title	Units
MBA* ZG622T	Project	8

Suggested Semesterwise pattern of courses

Year	First Semester			Second Semester		
	Course No.	Course Title	Units	Course No.	Course Title	Units
I	MBA* ZC415	Financial and Management Accounting	4	MBA* ZC411	Marketing	4
	MBA* ZC416	Managerial Economics	4	MBA* ZG538	Advanced Statistical Methods	4
	MBA* ZC417	Quantitative Methods	4	MBA* ZG536	Foundations of Data Science	4
	MBA* ZG511	Managing People & Organizations	4	MBA* ZG611	Strategic Management and Business Policy	4
		Total	**16**		**Total**	**16**
II	MBA* ZG512	Predictive Analytics	4		Elective 1	4
	MBA* ZC413	Analytics for Competitive Advantage	4		Elective 2	4
	MBA* ZG521	Financial Management	4	MBA* ZG622T	Project	8
	MBA* ZG526	Operations Management	4			
		Total	**16**		**Total**	**16**

MBA in Consultancy Management

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M. Sc. in relevant disciplines, with minimum one year work experience in relevant business domains.
(OR)
Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.

Nominal Duration: Four Semesters

Curriculum Requirements

Completion of the programme would require:
(a) At least 14 courses (totaling at least 56 units) towards coursework; and
(b) Project (8 units)

Programme Structure:

Management Core (8 Courses)

Course No.	Course Title	Units
MBA* ZC411	Marketing	4
MBA* ZC415	Financial and Management Accounting	4
MBA* ZC416	Managerial Economics	4
MBA* ZC417	Quantitative Methods	4
MBA* ZG511	Managing People & Organizations	4
MBA* ZG521	Financial Management	4
MBA* ZG526	Operations Management	4
MBA* ZG611	Strategic Management and Business Policy	4

Consultancy Core (4 Courses)

Course No.	Course Title	Units
MBA* ZG515	Consulting and People Skills	4
MBA* ZG525	Business Process Analysis	4
MBA* ZG541	Consultancy Practice	4
MBA* ZG634	Strategic Change Management	4

Pool of Electives

Course No.	Course Title	Units
MBA* ZG513	Enterprise Resource Planning	4
MBA* ZG514	Leadership and Managing Change	4
MBA* ZG523	Project Management	4
MBA* ZG535	Decision Analysis	4
MBA* ZG540	International Business and Trade	4
MBA* ZG542	Entrepreneurship and New Ventures	4
MBA* ZG543	Family Business Management	4
MBA* ZG544	Mergers, Acquisitions, and Corporate Restructuring	4
MBA* ZG621	Supply Chain Management	4

Project

Course No.	Course Title	Units
MBA* ZG622T	Project	8

Suggested Semesterwise pattern of courses

Year	Semester I		U	Semester II		U
I	MBA* ZC415	Financial and Management Accounting	4	MBA* ZC411	Marketing	4
	MBA* ZC416	Managerial Economics	4	MBA* ZG521	Financial Management	4
	MBA* ZC417	Quantitative Methods	4	MBA* ZG526	Operations Management	4
	MBA* ZG511	Managing People & Organizations	4	MBA* ZG541	Consultancy Practice	4
		Total	**16**		**Total**	**16**
II	MBA* ZG515	Consulting and People Skills	4		Elective 1	4
	MBA* ZG525	Business Process Analysis	4		Elective 2	4
	MBA* ZG611	Strategic Management & Business Policy	4	MBA* ZG622T	Project	8
	MBA* ZG634	Strategic Change Management	4			
		Total	**16**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

MBA in Finance

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M. Sc. in relevant disciplines, with minimum one year work experience in relevant business domains.
(OR)
Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.

Nominal Duration: Four Semesters

Curriculum Requirements

Completion of the programme would require:
(a) At least 14 courses (totaling at least 56 units) towards coursework; and
(b) Project (8 units)

Programme Structure:

Management Core (8 Courses)

Course No.	Course Title	Units
MBA* ZC411	Marketing	4
MBA* ZC415	Financial and Management Accounting	4
MBA* ZC416	Managerial Economics	4
MBA* ZC417	Quantitative Methods	4
MBA* ZG511	Managing People & Organizations	4
MBA* ZG521	Financial Management	4
MBA* ZG526	Operations Management	4
MBA* ZG611	Strategic Management and Business Policy	4

Finance Core (4 Courses)

Course No.	Course Title	Units
MBA* ZG517	Financial Analytics	4
MBA* ZG518	Multinational Finance	4
MBA* ZG520	Security Analysis & Portfolio Management	4
MBA* ZG560	Global Financial Markets and Products	4

Pool of Electives

Course No.	Course Title	Units
MBA* ZG516	Introduction to FinTech	4
MBA* ZG519	Business Analysis and Valuation	4
MBA* ZG528	Venture Capital and Private Equity	4
MBA* ZG544	Mergers, Acquisitions, and Corporate Restructuring	4

Course No.	Course Title	Units
MBA* ZG556	Advanced Risk Models	4
MBA* ZG558	Financial Risk Management	4
MBA* ZG559	Management of Banks & Financial Institutions	4
MBA* ZG561	Behavioural Finance	4
MBA* ZG562	Derivatives & Financial Engineering	4

Project

Course No.	Course Title	Units
MBA* ZG622T	Project	8

Suggested Semesterwise pattern of courses

Year	Semester I		U	Semester II		U
I	MBA* ZC415	Financial and Management Accounting	4	MBA* ZC411	Marketing	4
	MBA* ZC416	Managerial Economics	4	MBA* ZG521	Financial Management	4
	MBA* ZC417	Quantitative Methods	4	MBA* ZG526	Operations Management	4
	MBA* ZG511	Managing People & Organizations	4	MBA* ZG560	Global Financial Markets and Products	4
		Total	**16**		**Total**	**16**
II	MBA* ZG518	Multinational Finance	4		Elective 1	4
	MBA* ZG520	Security Analysis and Portfolio Management	4		Elective 2	4
	MBA* ZG517	Financial Analytics	4	MBA* ZG622T	Project	8
	MBA* ZG611	Strategic Management & Business Policy	4			
		Total	**16**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

MBA in FinTech

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M.Sc. in relevant disciplines, with minimum one year work experience in relevant domains
(OR)
Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.

Nominal Duration: Four Semesters

Curriculum Requirements:

Completion of the programme would require:
(a) At least 14 courses (totaling minimum of 56 units) towards course work, and
(b) Project (8 Units)

Programme Structure:

Management Core (8 Courses)

Course No.	Course Title	Units
MBA* ZC411	Marketing	4
MBA* ZC415	Financial and Management Accounting	4
MBA* ZC417	Quantitative Methods	4
MBA* ZG416	Managerial Economics	4
MBA* ZG511	Managing People & Organizations	4
MBA* ZG521	Financial Management	4
MBA* ZG526	Operations Management	4
MBA* ZG611	Strategic Management & Business Policy	4

FinTech Core (4 Courses)

Course No.	Course Title	Units
MBA* ZG516	Introduction to FinTech	4
MBA* ZG517	Financial Analytics	4
MBA* ZG553	Block Chain and Applications	4
MBA* ZG560	Global Financial Markets and Products	4

Pool of Electives

Course No.	Course Title	Units
MBA* ZC419	Financial Risk Analytics	4
MBA* ZG527	Entrepreneurship in FinTech	4
MBA* ZG529	Machine Learning for Finance	4
MBA* ZG530	InsurTech	4

Course No.	Course Title	Units
MBA* ZG532	Deep Learning Application in Finance	4
MBA* ZG533	Technology Disruptions in FinTech	4
MBA* ZG554	Digital Banking and Beyond	4
MBA* ZG555	Algorithmic and High Frequency Trading	4
MBA* ZG557	FinTech in Wealth Management	4

Project

Course No.	Course Title	Units
MBA* ZG622T	Project	8

Suggested Semesterwise pattern of courses

Year	First Semester			Second Semester		
	Course No.	Course Title	Units	Course No.	Course Title	Units
I	MBA* ZC415	Financial and Management Accounting	4	MBA* ZC411	Marketing	4
	MBA* ZC416	Managerial Economics	4	MBA* ZG521	Financial Management	4
	MBA* ZC417	Quantitative Methods	4	MBA* ZG526	Operations Management	4
	MBA* ZG511	Managing People & Organizations	4	MBA* ZG516	Introduction to FinTech	4
		Total	16		Total	16
II	MBA* ZG517	Financial Analytics	4		Elective 1	4
	MBA* ZG560	Global Financial Markets and Products	4		Elective 2	4
	MBA* ZG553	Block Chain and Applications	4	MBA* ZG622T	Project	8
	MBA* ZG611	Strategic Management & Business Policy	4			
		Total	16		Total	16

MBA in Hospital & Health Systems Management

Input criteria: Employed professionals in the healthcare industry, holding an Integrated **First Degree of BITS** or its equivalent / MBBS or its equivalent, with at least one year of relevant work experience.

Nominal Duration: Four semesters

Curriculum requirements:

Completion of the programme would require:

(a) Atleast 13 courses (totaling atleast 52 units) towards coursework; and

(b) Project (12 units)

Programme Structure

MANAGEMENT CORE (5 Courses)

Course No.	Course Title	Units
MBA ZC415	Financial and Management Accounting	4
MBA ZG521	Financial Management	4
MBA ZC416	Managerial Economics	4
MBA ZC411	Marketing	4
MBA ZC417	Quantitative Methods	4

DOMAIN CORE (7 Courses)

Course No.	Course Title	Units
HHSM ZG513	Biostatistics & Epidemiology	4
HHSM ZG516	Epidemic & Disaster Management	4
HHSM ZG517	Healthcare Management	4
HHSM ZG614	Hospital Operations Management	4
HHSM ZG631	Introduction to Health Systems & Environmental Health	4
HHSM ZG615	Service Quality Excellence in Healthcare	4
HHSM ZG617	Strategic Management of Healthcare Organizations	4

ELECTIVES(1 course to be chosen from the pool of electives)

Course No.	Course Title	Units
MBA ZG535	Decision Analysis	4
MBA ZG514	Leadership & Managing Change	4
MBA ZG523	Project Management	4

PROJECT

Course No.	Course Title	Units
MBA ZG623T	Project	12

MBA in Hospital & Health Systems Management

Semesterwise pattern

Year	First Semester		U	Second Semester		U
I	MBA ZC415	Financial and Management Accounting	4	MBA ZG521	Financial Management	4
	MBA ZC416	Managerial Economics	4	HHSM ZG516	Epidemic & Disaster Management	4
	MBA ZC411	Marketing	4	HHSM ZG631	Introduction to Health Systems & Environmental Health	4
	MBA ZC417	Quantitative Methods	4	HHSM ZG615	Service Quality Excellence in Healthcare	4
	Total		**16**	**Total**		**16**
II	HHSM ZG513	Biostatistics & Epidemiology	4	MBA ZG623T	Project	12
	HHSM ZG517	Healthcare Management	4		Elective 1	4
	HHSM ZG614	Hospital Operations Management	4			
	HHSM ZG617	Strategic Management of Health care Organizations	4			
	Total		**16**	**Total**		**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.
In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing the collaborating organization.

MBA in Manufacturing Management

Curriculum Structure

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M.Sc. in relevant disciplines, with minimum one year work experience in relevant business domains.

Nominal Duration: Four Semesters

Curriculum Requirements

Completion of the programme would require:

(a) At least 14 courses (totaling at least 56 units) towards coursework; and

(b) Project (8 units)

Programme Structure:

Management Core (8 Courses)

Course No.	Course Title	Units
MBA* ZC411	Marketing	4
MBA* ZC415	Financial and Management Accounting	4
MBA* ZC416	Managerial Economics	4
MBA* ZC417	Quantitative Methods	4
MBA* ZG511	Managing People & Organizations	4
MBA* ZG521	Financial Management	4
MBA* ZG526	Operations Management	4
MBA* ZG611	Strategic Management and Business Policy	4

Manufacturing Core (4 Courses)

Course No.	Course Title	Units
MBA* ZG522	Total Quality Management	4
MBA* ZG537	Lean Manufacturing	5
MBA* ZG545	Product Design and Development	4
MBA* ZG621	Supply Chain Management	4

Pool of Electives

Course No.	Course Title	Units
MBA* ZG514	Leadership and Managing Change	4
MBA* ZG523	Project Management	4
MBA* ZG534	Sustainable Manufacturing	4
MBA* ZG547	Modern Manufacturing	4
MBA* ZG548	Manufacturing Strategy	4
MBA* ZG565	Supply Chain Analytics	4

Project

Course No.	Course Title	Units
MBA* ZG622T	Project	8

Suggested Semesterwise pattern of courses

Year	Semester I		U	Semester II		U
I	MBA* ZC415	Financial and Management Accounting	4	MBA* ZC411	Marketing	4
	MBA* ZC416	Managerial Economics	4	MBA* ZG521	Financial Management	4
	MBA* ZC417	Quantitative Methods	4	MBA* ZG545	Product Design and Development	4
	MBA* ZG511	Managing People & Organizations	4	MBA* ZG526	Operations Management	4
		Total	**16**		**Total**	**16**
II	MBA* ZG522	Total Quality Management	4		Elective 1	4
	MBA* ZG621	Supply Chain Management	4		Elective 2	4
	MBA* ZG537	Lean Manufacturing	5	MBA* ZG622T	Project	8
	MBA* ZG611	Strategic Management and Business Policy	4			
		Total	**17**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

MBA in Quality Management
Curriculum Structure

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M.Sc. in relevant disciplines, with minimum one year work experience in relevant business domains.

Nominal Duration: Four Semesters

Curriculum Requirements

Completion of the programme would require:

(a) At least 14 courses (totaling at least 56 units) towards coursework; and

(b) Project (8 units)

Programme Structure:

Management Core (8 Courses)

Course No.	Course Title	Units
MBA* ZC411	Marketing	4
MBA* ZC415	Financial and Management Accounting	4
MBA* ZC416	Managerial Economics	4
MBA* ZC417	Quantitative Methods	4
MBA* ZG511	Managing People & Organizations	4
MBA* ZG521	Financial Management	4
MBA* ZG526	Operations Management	4
MBA* ZG611	Strategic Management and Business Policy	4

Quality Core (4 Courses)

Course No.	Course Title	Units
MBA* ZG522	Total Quality Management	4
MBA* ZG531	Statistical Quality Control	5
MBA* ZG549	Managing Quality in Services Industry	4
MBA* ZG550	Quality Management Systems	4

Pool of Electives

Course No.	Course Title	Units
MBA* ZG514	Leadership and Managing Change	4
MBA* ZG523	Project Management	4
MBA* ZG621	Supply Chain Management	4
MBA* ZG661	Software Quality Management	4
MBA* ZG551	Quality Analytics	4
MBA* ZG552	Business Acumen for Managing Quality	4

Project

Course No.	Course Title	Units
MBA* ZG622T	Project	8

Suggested Semesterwise Pattern of Courses

Year	Semester I		U	Semester II		U
I	MBA* ZC415	Financial and Management Accounting	4	MBA* ZC411	Marketing	4
	MBA* ZC416	Managerial Economics	4	MBA* ZG521	Financial Management	4
	MBA* ZC417	Quantitative Methods	4	MBA* ZG522	Total Quality Management	4
	MBA* ZG511	Managing People & Organizations	4	MBA* ZG526	Operations Management	4
		Total	**16**		**Total**	**16**
II	MBA* ZG549	Managing Quality in Services Industry	4		Elective 1	4
	MBA* ZG550	Quality Management Systems	4		Elective 2	4
	MBA* ZG531	Statistical Quality Control	5	MBA* ZG622T	Project	8
	MBA* ZG611	Strategic Management and Business Policy	4			
		Total	**17**		**Total**	**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

POST GRADUATE DIPLOMA

Curriculum Structure:

Normal Input: Three-year undergraduate degree in relevant disciplines. with adequate work experience in relevant domains.

Nominal duration: Two semesters.

Curriculum Structure for Post-graduate Diploma programme:

Category	Number of Courses Required	Number of Units Required
Core	4-8	14-36
Electives	0-4	0-18
Total	**8 courses (min)**	**28 to 36 units**

Post Graduate Diploma
(Business Analytics)

Type of Input:

Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M.Sc. in relevant disciplines, with minimum one year work experience in relevant business domains

(OR)

Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.

Nominal Duration: Two Semesters

Programme Structure:

Core Courses

Course No.	Course Title	Units
PDBA* ZC413	Analytics for Competitive Advantage	4
PDBA* ZC417	Quantitative Methods	4
PDBA* ZG512	Predictive Analytics	4
PDBA* ZG536	Foundations of Data Science	4
PDBA* ZG538	Advanced Statistical Methods	4
PDBA* ZG539	Data Visualization and Communication	4

Pool of Electives

Course No.	Course Title	Units
PDBA* ZG517	Financial Analytics	4
PDBA* ZG523	Project Management	4
PDBA* ZG563	Analytics for HR	4
PDBA* ZG564	Models in Marketing	4
PDBA* ZG565	Supply Chain Analytics	4
PDBA* ZG566	Analytics for Marketing	4
PDBA* ZG567	Analytics for Retail Industry	4
PDBA* ZG568	Operations Research Models	4
PDBA* ZG569	Analytics for Investment Banking	4
PDBA* ZG570	Financial Risk Models	4
PDBA* ZG571	Analytical Models in Finance	4

Post Graduate Diploma
(Business Analytics)

Semesterwise pattern

Year	First Semester			Second Semester		
	Course No.	Course Title	Units	Course No.	Course Title	Units
I	PDBA* ZC417	Quantitative Methods	4	PDBA* ZG512	Predictive Analytics	4
	PDBA* ZG539	Data Visualization and Communication	4	PDBA* ZC413	Analytics for Competitive Advantage	4
	PDBA* ZG538	Advanced Statistical Methods	4		Elective 1	4
	PDBA* ZG536	Foundations of Data Science	4		Elective 2	4
		Total	16		Total	16

Post Graduate Diploma
(Finance)

Type of Input: Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./ M.Sc. in relevant disciplines, with minimum one year work experience in relevant business domains.

(OR)

Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.

Nominal Duration: Two Semesters

Curriculum Requirements

Completion of the programme would require:

- At least 8 courses (totaling at least 32 units) towards coursework

Programme Structure:

Core Courses

Course No.	Course Title	Units
PDFI* ZC415	Financial and Management Accounting	4
PDFI* ZG517	Financial Analytics	4
PDFI* ZG518	Multinational Finance	4
PDFI* ZG520	Security Analysis & Portfolio Management	4
PDFI* ZG521	Financial Management	4
PDFI* ZG560	Global Financial Markets and Products	4

Pool of Electives

Course No.	Course Title	Units
PDFI* ZG559	Management of Banks & Financial Institutions	4
PDFI* ZG516	Introduction to FinTech	4
PDFI* ZG519	Business Analysis and Valuation	4
PDFI* ZG528	Venture Capital and Private Equity	4
PDFI* ZG544	Mergers, Acquisitions, and Corporate Restructuring	4
PDFI* ZG556	Advanced Risk Models	4
PDFI* ZG558	Financial Risk Management	4
PDFI* ZG561	Behavioural Finance	4
PDFI* ZG562	Derivatives & Financial Engineering	4

Post Graduate Diploma
(Finance)
Semesterwise pattern

Year	First Semester		U	Second Semester		U
	Course No.	Course Title		Course No.	Course Title	
I	PDFI* ZC415	Financial and Management Accounting	4	PDFI* ZG518	Multinational Finance	4
	PDFI* ZG521	Financial Management	4	PDFI* ZG517	Financial Analytics	4
	PDFI* ZG560	Global Financial Markets and Products	4		Elective 1	4
	PDFI* ZG520	Security Analysis and Portfolio Management	4		Elective 2	4
	Total		**16**	**Total**		**16**

Note: This is the currently operative pattern as approved by the Senate-appointed committee, subject to change if the situation warrants.

Post Graduate Diploma
(FinTech)

Type of Input:	Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./M.Sc. in relevant disciplines, with minimum one-year work experience in relevant domains **(OR)** Employed professionals holding a three year undergraduate degree in such areas as Mathematics, Statistics, Science, Economics, Commerce, and Business Management, and having studied at least one course in mathematics or statistics at the high school or higher level, and with minimum two years of work experience in relevant business domains.
Nominal Duration:	Two Semesters

Programme Structure:

Core Courses

Course No.	Course Title	Units
PDFT* ZC417	Quantitative Methods	4
PDFT* ZG516	Introduction to FinTech	4
PDFT* ZG517	Financial Analytics	4
PDFT* ZG521	Financial Management	4
PDFT* ZG553	Block Chain and Applications	4
PDFT* ZG560	Global Financial Markets and Products	4

Pool of Electives

Course No.	Course Title	Units
PDFT* ZC419	Financial Risk Analytics	4
PDFT* ZG527	Entrepreneurship in FinTech	4
PDFT* ZG529	Machine Learning for Finance	4
PDFT* ZG530	InsurTech	4
PDFT* ZG532	Deep Learning Application in Finance	4
PDFT* ZG533	Technology Disruptions in FinTech	4
PDFT* ZG554	Digital Banking and Beyond	4
PDFT* ZG555	Algorithmic and High Frequency Trading	4
PDFT* ZG557	FinTech in Wealth Management	4

Post Graduate Diploma
(FinTech)

Semesterwise pattern

Year	First Semester			Second Semester		
	Course No.	Course Title	Units	Course No.	Course Title	Units
I	PDFT* ZC417	Quantitative Methods	4	PDFT* ZG517	Financial Analytics	4
	PDFT* ZG521	Financial Management	4	PDFT* ZG553	Block Chain and Applications	4
	PDFT* ZG560	Global Financial Markets and Products	4		Elective 1	4
	PDFT* ZG516	Introduction to FinTech	4		Elective 2	4
	Total		16	Total		16

Post Graduate Diploma
(Manufacturing Management)

Type of Input:

1. Employed professionals holding a three-year undergraduate degree or its equivalent in relevant disciplines, with adequate work experience in relevant domains.
2. Employed professionals holding a three-year undergraduate degree or its equivalent in relevant disciplines, and a Post-graduate Certificate in Manufacturing Practice, with adequate work experience in relevant domains, for admission into the second semester of the programme with a credit transfer of up to 16 units from the said certificate.

Nominal Duration: Two Semesters

Programme Structure

Core courses

Course No.	Course Title	Units
PDMM* ZC415	Financial and Management Accounting	4
PDMM* ZG537	Lean Manufacturing	5
PDMM* ZC416	Managerial Economics	4
PDMM* ZG511	Managing People & Organizations	4
PDMM* ZC411	Marketing	4
PDMM* ZG526	Operations Management	4
PDMM* ZC417	Quantitative Methods	4
PDMM* ZG522	Total Quality Management	4

Semesterwise pattern

Course No.	Course Title	Units
First Semester		
PDMM*ZG511	Managing People & Organizations	4
PDMM*ZG522	Total Quality Management	4
PDMM*ZG526	Operations Management	4
PDMM*ZG537	Lean Manufacturing	5
Second Semester		
PDMM*ZC411	Marketing	4
PDMM*ZC415	Financial and Management Accounting	4
PDMM*ZC416	Managerial Economics	4
PDMM*ZC417	Quantitative Methods	4

Post Graduate Certificate Programme
(Artificial Intelligence and Machine Learning)

Type of Input:	Employed professionals holding a M.Sc. degree with mathematics/statistics with adequate work experience in relevant domains or Employed professionals holding a four-year B.Tech. degree or its equivalent in relevant disciplines.
Expected Learning Hours:	~440 hours
Minimum Requirement for Certification	Successful completion of the certificate programme would require completion of all the courses with a minimum C- grade in each course
Marginal Deficiency	Students without sufficient exposure to Python programming language will have to complete the deficiency course/module on Python before the start of the certificate programme. However, the performance in the deficiency course/module will not be accounted in the calculation of CGPA and will not be part of the requirement for certification.

List of Courses

Course No.	Course Title	Units
PCAM* ZC211	Regression	2
PCAM* ZC111	Feature Engineering	1
PCAM* ZC311	Classification	3
PCAM* ZC221	Unsupervised Learning and Association Rule Mining	2
PCAM* ZC231	Text Mining	2
PCAM* ZC241	Deep Learning and Artificial Neural Networks	2
PCAM* ZC321	Capstone Project	3
	Total	15

Note: In the above programme structure, the symbol * in the course numbers can be substituted by the letters representing collaborating organization.

Post Graduate Certificate Programme
(Big Data & Analytics)

Type of Input	Employed professionals holding a three-year undergraduate degree in relevant disciplines, with adequate preparation in Mathematics and Computer Programming, as well as adequate work experience in relevant domains.
(Expected) Learning Hours	~ 230 hours
Minimum Requirement for Certification	Successful completion of the Certificate Programme would require: 1. Completion of all courses with a minimum C- grade in each course. 2. Obtaining a minimum CGPA of 5.00
Marginal Deficiency	Students without sufficient exposure to courses like Data Structures & Algorithms, Database Systems, and Object Oriented Programming using Java would be prescribed deficiency modules. While the student must complete the deficiency modules before start of the program, the performance in the deficiency modules will not be accounted in the calculation of CGPA and will not be part of the requirement for certification.

List of Courses

Course No.	Course Title	Units
CBDA ZG511	The Hadoop Framework	1
CBDA ZG521	ETL & Batch Processing with Hadoop	2
CBDA ZG531	Big Data Analytics with Spark	3
CBDA ZG541	Capstone Project	2
	Total	**8**

Post Graduate Certificate Programme
(Big Data Engineering)

Type of Input:	Employed professionals holding a three-year undergraduate degree in relevant discipline, with adequate preparation in Mathematics and Computer Programming, as well as adequate work experience in relevant domains.
(Expected) Learning Hours	~ 315 hours
Minimum Requirement for Certification	Successful completion of the Certificate Programme would require: 1. Completion of all courses with a minimum C- grade in each course. 2. Obtaining a minimum CGPA of 5.00
Marginal Deficiency	Students without sufficient exposure to courses like Data Structures & Algorithms and Database Systems would be prescribed deficiency modules. While the student must complete the deficiency modules before start of the program, the performance in the deficiency modules will not be accounted in the calculation of CGPA and will not be part of the requirement for certification.

List of courses

Course No.	Course Title	Units
CBDE ZG511	Foundations of Big Data Systems	2
CBDE ZG521	Platforms for Big Data	2
CBDE ZG531	Processing Big Data - ETL & Batch Processing	2
CBDE ZG541	Processing of Real-Time Data and Streaming Data	1
CBDE ZG551	Big Data Analytics	1
CBDE ZG571	Capstone Project	3
	Total	**11**

Post Graduate Certificate Programme
(Full Stack Engineering)

Type of Input:	Employed professionals holding an Integrated First Degree of BITS or its equivalent such as B.E./B.Tech/M.Sc./MCA. Degree or its equivalent in relevant disciplines and adequate work experience in the software industry.
Expected Learning Hours and Units	~630 hours(21 Units)
Minimum Requirement for Certification	1. Successful completion of the certificate programme would require completion of all the courses with a minimum C- grade in each course 2. Obtaining a minimum CGPA of 5.00
Marginal Deficiency	Students without sufficient exposure to courses like Python Programming and Database Systems (SQL) would be prescribed deficiency modules. The performance in the deficiency modules will not be accounted in the calculation of CGPA and will not be part of the requirement for certification.

List of Courses

Course No.	Course Title	Units
CFSE ZG511	Overview of Full Stack Engineering	2
CFSE ZG521	Web Development	5
CFSE ZG531	Mobile Application Development	2
CFSE ZG541	Cloud Native Development	3
CFSE ZG551	Agile and DevOps	3
CFSE ZG561	Deployment of Microservices	2
CFSE ZG571	Capstone Project	4
	Total	21

Post Graduate Certificate Programme
(General Management)

Type of Input: Employed professionals holding a three-year undergraduate degree or its equivalent in relevant disciplines, with adequate work experience in relevant domains.

Expected Learning Hours: ~480 hours

Minimum Requirement for Certification : Successful completion of the Certificate Programme would require:
Obtaining a minimum CGPA of 5.50

Semesterwise Pattern

Course No.	Course Title	Units
PCGM* ZC411	Marketing	4
PCGM* ZC415	Financial and Management Accounting	4
PCGM* ZC417	Quantitative Methods	4
PCGM* ZC416	Managerial Economics	4

Post Graduate Certificate Programme

(Internet of Things)

Type of Input:	Employed professionals holding an Integrated First Degree of BITS or its equivalent in Electrical & Electronics Engineering or Computer Science or other relevant discipline with adequate work experience in relevant domains.
(Expected) Learning Hours	~ 650 hours
Minimum Requirement for Certification	Successful completion of the Certificate Programme would require: 1. Completion of all courses with a minimum C- grade in each course. 2. Obtaining a minimum CGPA of 5.00

List of courses

Course No.	Course Title	Units
CIOT ZG511	IoT Technology and Applications	3
CIOT ZG521	Hardware Architectures for IoT	4
CIOT ZG531	Communication and Networking Technologies in IoT	3
CIOT ZG541	Sensors, Actuators, and Signal Processing	3
CIOT ZG551	Software and Programming in IoT	4
CIOT ZG561	Data Management in IoT	2
CIOT ZG571	Capstone Project	3
	Total	22

Post Graduate Certificate
(Manufacturing Practice)

Type of Input: Employed professionals holding a three-year undergraduate degree or its equivalent in relevant disciplines, with adequate work experience in relevant domains.

Expected Learning Hours: ~510 hours

Minimum Requirement for Certification : Successful completion of the Certificate Programme would require: Obtaining a minimum CGPA of 5.50

Semesterwise Pattern

Course No.	Course Title	Units
PCMP* ZG511	Managing People & Organizations	4
PCMP* ZG526	Operations Management	4
PCMP* ZG537	Lean Manufacturing	5
PCMP* ZG522	Total Quality Management	4

Post Graduate Certificate Programme
(Non-sewered Sanitation)

Type of Input:	Employed professionals holding an Integrated First Degree of BITS or its equivalent in the areas of Civil, Chemical Engineering, Chemistry, Biology or other relevant discipline with adequate work experience in relevant domains.
(Expected) Learning Hours	~ 600 hours
Minimum Requirement for Certification	Successful completion of the Certificate Programme would require: Obtaining a minimum CGPA of 5.00

List of courses

Course No.	Course Title	Units
CNSS ZG511	Sanitation Technology	5
CNSS ZG512	Sanitation and Public Health	5
CNSS ZG513	Sanitation Governance, Behavioral Change and Advocacy	5
CNSS ZG515	Emergency Sanitation and Leadership	5
	Total	20

Certificate in Manufacturing Practice

Type of Input: Employed professionals holding a Technical Diploma or its equivalent, with adequate work experience in relevant domains.

Expected Learning Hours: ~390 hours

Minimum Requirement for Certification: Successful completion of the Certificate Programme would require: Obtaining a minimum CGPA of 4.50

Semester wise pattern

Course No.	Course Title	Units
CMP* ZC411	Managing People & Organizations	3
CMP* ZC426	Operations Management	3
CMP* ZC437	Lean Manufacturing	4
CMP* ZC422	Total Quality Management	3

Certificate in General Management

Type of Input: Employed professionals holding a Technical Diploma or its equivalent, with adequate work experience in relevant domains.

Expected Learning hours: ~360 hours

Minimum Requirement for Certification: Successful completion of the Certificate Programme would require: Obtaining a minimum CGPA of 4.50

Semesterwise Pattern

Course No.	Course Title	Units
CGM* ZC411	Marketing	3
CGM* ZC421	Financial and Management Accounting	3
CGM* ZC431	Quantitative Methods	3
CGM* ZC414	Managerial Economics	3

PART VIII

ADMINISTRATIVE STRUCTURE

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
ADMINISTRATIVE STRUCTURE

VICE-CHANCELLOR

Director, Pilani Campus	Director, K K Birla Goa Campus	Director, Hyderabad Campus	Director, Dubai Campus	Director, Off-Campus Programmes and Industry Engagement

Divisions										Departments	
Dean	**Dean**	**Dean**	**Dean/Associate Dean**	**Dean**	**Dean**	**Dean**	**Dean**	**Dean**	**Director-in-Charge/Dean**	**Head of the Department (HoD)**	
Administration	**Academic – Graduate Studies and Research**	**Academic – Under Graduate Studies**	**Student Welfare**	**Alumni Relations**	**Sponsored Research and Consultancy**	**Faculty Affairs**	**Practice School**	**Work Integrated Learning Programmes**	**International Programmes and Collaboration**		
	Associate Deans Faculty In-charge Nucleus members	**Associate Deans Faculty In-charge Nucleus members**	**Chief Warden Nucleus members**	**Associate Deans**	**Associate Deans Nucleus members**	**Associate Deans Nucleus member**	**Associate Deans Nucleus members**	**Associate Deans Nucleus members**	**Associate Deans**		
Administration and Finance	Admissions Operation of Flexibilities (Transfer, etc.) Registration Planning & Operation Academic Records of Students Eligibility Transcripts, Provisional Certificates Counselling Timetable Teaching Allocation & Implementation Feedback & Monitoring Academic Programs & Growth Curriculum Design & Implementation Pedagogic Practices Ph.D. Programmes	Admissions Operation of Flexibilities (Transfer, Dual Degree etc.) Registration Planning & Operation Academic Records of Students Eligibility Transcripts, Provisional Certificates Counselling Timetable Teaching Allocation & Implementation Feedback & Monitoring Academic Programs & Growth Curriculum Design & Implementation Pedagogic Practices	Hostels, NSS, Games & Athletics Student Activities Railway Concessions Scholarships & Aids Students Personal Files & Testimonials Student Discipline Recreational Activity Forum	Connect with global alumni and conceptualize, develop and organize various alumni led initiatives related to campus development, student life, and academic processes Alumni Records	Sponsored Research and Consultancy, interface with external funding agencies and Industry, Innovation and IP management, Technology Transfer & Commercialization	Faculty Recruitment, Performance Appraisal, Faculty Training & Development, Extension & Reappointment of Faculty	Establishment of Stations Faculty Allocation Feedback & Monitoring Student Needs at PS Location Station Operation Student Assignment & Evaluation	Off-Campus Work Integrated Learning Programmes Operation of Centres Preparation and delivering of Courses Academic Monitoring Board Admissions, Registration & Students Records	Promotes relations with renowned Institutions abroad for student and faculty exchanges and collaborative research with peers at foreign Universities	Chemical Engineering Civil Engineering Computer Science & Information Systems Electrical & Electronics Engineering Mechanical Engineering	Biological Sciences Chemistry Economics and Finance Management Mathematics Pharmacy Physics Humanities and Social Sciences

Registrar	*Section Head*	*Section Head*	*Unit Chief*	*Unit Chief*	*Professor –in-Charge*	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge & Estate Manager	Faculty-in-Charge	Faculty-in-Charge
General Administration	**HR Section**	**Accounts and Finance Section**	**Centralized Purchases**	**Placement**	**Anuradha and Prashanth Palakurthi Centre for Artificial Intelligene Research (APPCAIR)**	**Center for Innovation, Incubation & Entrepreneurship**	**Educational Technology Support**	**Estate Management**	**Infant Care Center & Institution Functions**	**Workshop**
Meetings, Institute Records, Award of Degrees/ Diplomas & Medals Scrutiny of Grades/ Reports Legal Affairs, Statutory Compliances	Recruitment, Personal Records of all employees, Compensation & Benefits, Employee Welfare (PF, ESI, Gratuity, Pension), PMS, Training, Budget preparation, Medical, LTC, Loans (Housing, Computer & Vehicle loan), Statutory Compliances, etc.	Accounts, Finance Planning, Budget preparation, Auditing, Statutory Compliance, GST, PF, Fixed Assets Management, Direct-Indirect taxes, Depositions & Accounting, Payroll-returns, Handling Govt. Grants, Treasury Management & Banking, MIS, etc.	Central Purchase Central Inventory of equipment	Campus Interviews, Placements	Research, Collaboration and Linkage with Industry	Entrepreneurship Development CEL and Network Activities TBI, PIED Technology Innovation Centre	Education & Research	Electricity & Water Supply Campus Planning, Buildings' Construction, Maintenance	Extension Activities Infant Care Centre Inter National Relational	Student Training Fabrication Servicing & Maintenance

Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge	Faculty-in-Charge
Institutional Knowledge Analysis Cell (IKA)	**Information Processing Centre**	**Instrumentation, Reprography**	**Public Relations**	**Publications & Media Relations**	**Societal Development**	**Software Development & Educational Technology**	**Teaching Learning Centre**	**Transport Services Section, VFAST & Cafeteria**
Benchmarking, Rankings & Accreditation	Centralized Computer Facilities	Service & Maintenance of instruments EPABX Projection facilities Stage Light and Public Address System Printing	Public Relations	All publications of the Institute Publicity through audio-visual and print media publications Media Relations Printing & Reprography	NSS NIRMAN	Software Research & Development Software Consultancy Identification and deployment of Educational Technologies e-Learning technologies, course management etc. Video-conferencing	Faculty Orientation & Teaching Learning	Transportation services, VFAST & Cafeteria

Librarian/Dy. Liabrarians	CMO/Dy.CMO	Section Head
Library	**Medical Centre**	**Security Section**
Information Centre: Electronic resources- Databases, Journals and E-books, Publications	Healthcare services	Security services

ADMINISTRATIVE STRUCTURE

The Institute has a functional administrative structure (pages VIII-1 and VIII-2). Vice-Chancellor is the executive head of the Institute, including all its campuses. Further, each Campus has a Director who takes care of the day-to-day academic and administrative operations of the Campus.

Various activities and requirements arising out of innovative educational programmes have been grouped into functions and each functional Division is headed by a Dean and each Unit by a Chief. Similarly the departments are headed by the Head of the Department. There are also faculty members designated as Incharge of various activities such as Instruction, Registration, Practice School, etc.

For each Division and Unit, there are cohesive teams of faculty known as the nucleus to support the activities of the Division/Unit. The administrative officers are:

Dean: Head of a Division

Chief: Head of a Unit

Head: Head of a Department

Some faculty members of the Institute are administratively attached to a Department / Division / Unit or to offices like Vice-Chancellor's Office and Director's Office, etc.

OFFICERS OF ACADEMIC ADMINISTRATION

Acting Vice-Chancellor

Prof. Ranendra Narayan Saha

Directors

Prof. Sudhirkumar Barai**,** Pilani Campus

Prof. Srinivasan M P, Dubai Campus

Prof. Gunaje Raghurama, K K Birla Goa Campus

Prof. G. Sundar**,** Hyderabad Campus & Off-Campus Programmes and Industry Engagement

Acting Registrar

Prof. Bijay Kumar Rout

Chief Financial Officer

Mr. Arun Khetan

Head, HR

Mr. Mahesh Gopalan

Chief Placement Officer

Mr. G. Balasubramanian

Programme Head, ERP

Mr. Puram Ramachandra

ADMINISTRATION

Dean, Administration (Campuswide)

Prof. S.K. Verma, Pilani Campus

Prof. Dhananjay Madhukar Kulkarni, K K Birla Goa Campus

Prof. Niranjan Swain, Hyderabad Campus

ACADEMIC - GRADUATE STUDIES AND RESEARCH (AGSR)

Dean, AGSR (Institute Wide)

Prof. M B Srinivas

Associate Deans, AGSR

Prof Jitendra Panwar, Pilani campus

Prof. Bharat Madhusudan Deshpande, K K Birla Goa campus

Prof. Venkata Vamsi Krishna Venuganti, Hyderabad campus

Prof. Ramanujam Karthikeyan, Dubai campus

Faculty incharge, Academic Research

Prof. Chandradew Sharma, K K Birla Goa Campus

ACADEMIC - UNDER GRADUATE STUDIES (AUGS)

Dean, AUGS (Institute Wide)

Prof. Ajit Pratap Singh

Associate Deans, AUGS

Prof. Suresh Gupta, Pilani Campus

Prof. Neena Goveas, K K Birla Goa campus

Prof. Vasan A, Hyderabad Campus

Prof. K. Kumar, Dubai campus

Nucleus, AUGS

K K Birla Goa Campus: Prof. Manjuri Kumar, Prof. Abhijit Jayant Pethe, Prof. Mainak Banerjee, Prof. Alamelu Geetha Krishnamurthy, Dr. Tincy L. Thomas, Dr. Varinder Singh, Dr. Rashmi Chauhan, Dr. Jayadevan Kampurath Poduvattil, Dr. Manoj Kumar Pandey, Prof. Jajati Keshari Sahoo, Dr. Amol Anilrao Deshpande, Dr. Bidisha Banerjee, Dr. Subhasis Roy

ADMISSIONS

Professor incharge (BITSAT)

Prof. Chittaranjan Hota, Hyderabad Campus

Faculty Incharge

Dr. S U Belgamwar, First Degree Admission Tests, Pilani Campus

Prof. Shamik Chakraborty, Higher Degree and Ph.D. Admission Tests, Pilani Campus

Dr. Vikas Vinayak Chaudhari, K K Birla Goa Campus

Prof. Amit Nag, Hyderabad Campus

Nucleus (Admissions)

K K Birla Goa Campus:- Prof. Sandhya Mehrotra

Faculty In Charge, Instruction

Prof. Bhavana P, K K Birla Goa Campus

Faculty In Charge, Registration

Prof. Jitendra Singh Rathore, Registration & Counseling, Pilani Campus

Prof. Amrita Chatterjee, K K Birla Goa Campus

Faculty In Charge, Academic Counseling And Monitoring

Prof. Malabika Biswas, K K Birla Goa Campus

FACULTY AFFAIRS DIVISION (FAD)

Dean, FAD (Institute wide)

Prof. Souri Banerjee

Associate Deans, FAD

Prof. Anshuman Dalvi, Pilani campus

Prof. Sutapa Roy Ramanan, K K Birla Goa campus

Prof. Vidya Rajesh, Hyderabad Campus

PRACTICE SCHOOL DIVISION (PSD)

Dean, PSD

Prof. Srinivasa Prakash Regalla

Associate Deans, PSD

Prof. Anil B. Gaikwad, Pilani campus

Prof. Annapoorna Gopal, PS Centre, Bangalore

Prof. Waigaonkar Sachin Damodharrao, K K Birla Goa Campus

Prof. P Sankar Ganesh, Hyderabad campus

Prof. A. Somasundaram, Dubai Campus

Nucleus, PSD

Prof. S. Murugesan, Pilani Campus

Dr. G Muthukumar, Pilani Campus

University Wide Operation Manager

Mr. Varun Singh Dewal

SPONSORED RESEARCH AND CONSULTANCY DIVISION (SRCD)

Dean, SRCD (Institute wide)

Prof. Sunil Bhand

Associate Deans, SRCD

Prof. Navneet Gupta, Pilani campus

Prof. Meenal Kowshik, K K Birla Goa Campus

Prof. Anupam Bhattacharya, Hyderabad Campus

WORK INTEGRATED LEARNING PROGRAMMES DIVISION (WILPD)

Dean, WILPD

Prof. S. Gurunarayanan

COO, WILPD

Mr. Rajiv Tandon

Associate Deans, WILPD

Prof. P. Srinivasan, Pilani Campus

Prof. G. Venkiteswaran, Chennai Center

Prof. Anupama Karuppiah, K K Birla Goa Campus

Prof. Punna Rao Ravi, Hyderabad Campus

Prof. Sridhar Raju, Hyderabad Campus

Prof. P.B. Venkataraman, Hyderabad Campus

Nucleus, WILPD

Dr. Manojkumar Surajkaranji Soni

INTERNATIONAL PROGRAMMES AND COLLABORATION DIVISION (IPCD)

Director-in-Charge, IPCD

Prof. Sudhirkumar Barai

Associate Deans, IPCD

Prof. Dalip Kumar, Pilani campus

Prof. Rejesh Mehrotra , K K Birla Goa campus

Prof. Bivudutta Mishra, Hyderabad campus

ALUMNI RELATIONS DIVISION

Dean (Institute wide)

Prof. Arya Kumar

Head, Alumni Relations & Fundraising

Sachin Arya

Associate Dean

Prof. Rajeev Sakhuja, Pilani Campus

Prof. Veeky Baths, K K Birla Goa Campus

Prof. Meenakshi Viswanathan, Hyderabad Campus

Faculty-in-Charge

Prof. Trupti Swarup Gokhale, Dubai Campus

Student Alumni Relations Cell (SARC)

Pilani Campus - Yash Thakker, Vidushi Sahay

Aditya Mishra, Ronak Vishnoi, Soham Bhowmick, Rhea Verma

K K Birla Goa Campus - Ashlesha Jagdale, Bhanupratap Bharadwaj, Hrithik Khanna, Nipun Gupta, Suprada Bhat

Hyderabad Campus - Aarnav Sanghvi, Diya Singhal, Akshitha Srinivasan, Vibha N, Jaya Sharma, Aneesha Tulluri

Dubai Campus - Ritik Panda, Karthika S, Pranshu Goyanka, Sanjam Chhatwal, Roshni Dodhi, Mardiyah Khadijah, Arushi Kansal

STUDENT WELFARE DIVISION (SWD)

Associate Deans, SWD

Prof. Srikant Routroy, Pilani campus

Prof. Ramesha C.K, K K Birla Goa Campus

Prof. Sandip S. Deshmukh, Hyderabad Campus

Prof. Priti Bajpai, Dubai campus

Chief Wardens

Prof. Navin Singh, Pilani Campus

Prof. Angushuman Sarkar, K K Birla Goa Campus

Dr. Phaneendra Kiran Chaganti, Hyderabad Campus

Dr. Naveen Kumar Shrivastava, Dubai Campus

Wardens of Bhawans, Pilani Campus

Chief Warden (Prof. Navin Singh), Bhagirath Bhawan (Dr. Shuvendu N Patel), Budh Bhawan (Dr. Sharad Shrivastava), Gandhi Bhawan (Dr. Nitin Chaturvedi), Krishna Bhawan (Dr. Arun Kumar Jalan), Malaviya Bhawan- A,B,C (Dr. Trilok Mathur), Meera Bhawan (Prof. Surekha Bhanot), Meera Bhawan (Dr. Rakhee), Ram Bhawan (Dr. Dipendu Bhunia), Shankar Bhawan (Dr. Kumar Sankar Bhattacharya), Sir C.V. Raman Bhawan (Dr. Paritosh Shukla), Srinivas Ramanujam (Dr. Krishna M), Vishwakarma Bhawan (Dr. Krishnendra Shekhawat), Day Scholar (Warden) Prof. Ravi Kant Mittal

Non-resident Wardens, Pilani Campus

Prof. Devendra Kumar (Gandhi Bhawan), Dr. Bibhas Ranjan Sarkar (Krishna Bhawan), Dr. Ashish Tiwari (Shankar Bhawan), Dr. Murali Palla (Bhagirath Bhawan), Dr. Harikrishnan Gopinadhan Nair (Ashok Bhawan), Dr. Biswanath Layek (Malviya Bhawan), Dr. Rajiv Taliyan (Sir C.V. Raman Bhawan), Dr. Srinivas Appari (Srinivas Ramanujan Bhawan), Dr. Kamlesh Tiwari (Rana Pratap Bhawan), Dr. M.M. Pandey (Ram Bhawan), Dr. Sailaja Nandigama (Meera Bhawan), Prof. Devika (Meera Bhawan), Dr. Niladri Sarkar (Budh Bhawan), Dr. Prashant U Manohar (Viswakarma Bhawan), Dr. Praveen Kumar A V (Malviya (MSA) Bhawan

Wardens of Hostels, Dubai Campus

Dr. Gulshan Kumar, Prof. Geetha, Mr Harold Franklin, Ms. Sheeba Uruj

Wardens of Hostels, K K Birla Goa Campus

Prof. Amit Setia (CH-1), Dr. Pravin Sakharam Mane (CH-2),Prof. Angshuman Sarkar (CH3 & CH-6), Prof. Alamelu Geetha Krishnamurthy (CH-4), Dr. Jegatha Nambi Krishnan (CH-5), Dr. Shilpa Suresh Gondhali (CH-7), Dr. Himadri Mukherjee (AH-1), Prof. Kundan Kumar (AH-2), Dr. Manoj Kumar Pandey(AH-3), Prof. V.V.S.N.V. Prasad Chundru (AH-4), Dr. Kiran Dinakar Mali (AH-5), Dr. Varinder Singh (AH-6), Dr. Ravi Prasad Aduri (AH-7), Dr. Sunilkumar Vattezhath (AH-8), Prof. Mainak Banerjee (AH-9) Prof. Sukanta Mondal (DH-1& DH-2), Prof. Sanjay K. Sahay (DH-3 & DH-4)

Dr. Phanendra Kiran Chaganti, Chief Warden & Warden (Valmiki Bhawan), Dr. Arkamitra Kar (Gautam Bhawan), Dr. Jagan Mohan Jonnalagadda (Krishna Bhawan), Dr. D Purnima (Malaviya Bhawan), Dr. Bahurudeen A (Budh Bhawan), Dr. Syed Ershad Ahmed, (Ram Bhawan), Dr. Mithun Mondal (Vyas Bhawan), Dr. Swati Biswas (Meera Bhawan), Dr. Sabareesh Geetha Rajasekharan, (Gandhi Bhawan), Prof. Onkar P Kulkarni (Shankar Bhawan), Dr. Thota Nagaraju (Vishwakarma Bhawan), Dr. Mohan SC (Vishwakarma Bhawan), Dr. Santosh Kumar Mhahapatra (Research Scholars Bhawan)

Non-resident Wardens, Hyderabad Campus

Dr. Prasanth Kumar Samanta Ray (Gautam Bhawan), Dr. Subhrakanta Panda (Vyas Bhawan), Dr. Pranesh Bhargava (Budh Bhawan), Dr. Lov Kumar (Viswakarma Bhawan 1), Dr. Piyush Khandelia (Viswakarma Bhawan 2), Dr. Nitin Kotkunde (Valmiki Bhawan), Dr. Mithun Mondal (Gandhi Bhawan), Dr. Vivek Sharma (Shankar Bhawan), Dr. Satish Kumar Dubey (Ram Bhawan), Dr. Manish Kumar (Krishna Bhawan), Dr. T S L Radhika (Meera Bhawan), Prof. Alivelu Manga Parimi (Malaviya Bhawan)

Physical Education

Dr. Pintu Modak (In-charge, Physical Education)

Dr. Chandu Gurappa Lamani, Physical Education Officer, K K Birla Goa Campus

National Service Scheme

Dr. Ashish Tiwari, Societal Development, Faculty incharge (NSS and Nirmaan)

Dr. N. Kishore Kumar (Programme Co-ordinator), Hyderabad Campus

Unit Chief, Centralised Purchases Unit (CPU)

Prof. N.V. Muralidhar Rao

Faculty-incharge CPU

Prof. A. Ramesh Babu, Hyderabad Campus

Unit Chief, Placement Unit (PU)

Prof. Hari Om Bansal

Faculty Incharge, Placement

Prof. Amalin Prince A., K K Birla Goa Campus

Dr. Kurra Suresh, Hyderabad Campus

Dr. Soumya J, Hyderabad Campus

Senior Manager - Placements

Mr. Tabir Mishra, Pilani Campus

Mr. R.B. Mouli, K K Birla Goa Campus

Mr. Biju Rajan, Hyderabad Campus

Placement Executive

Ms. Rouble Dhawan, Dubai Campus

Mr. Amsal Muneeb, Dubai Campus

ESTATE MANAGEMENT

Faculty Incharge

Prof. Dipendu Bhunia, Estate Management, Pilan Campus

Estate Manager

Mr. Amit Goel, Pilani Campus

Mr. Anand Kallanna Patil, K K Birla Goa Campus

Mr. B. Muthukrishnan, Hyderabad Campus

GENERAL ADMINISTRATION

Acting Registrar

Prof. Bijay Kumar Rout

Deputy Registrar

Mr. Ashish Gupta, Pilani Campus

Mr. Sailesh Narayan Mohanty, K K Birla Goa Campus

Mr. Venkata Narayana Rao A, Hyderabad Campus

Assistant Registrar

Ms. Anjali Dixit, K K Birla Goa Campus

Mr. Akshay Chutani, Dubai Campus

PUBLICATIONS AND MEDIA RELATIONS

Faculty Incharge

Prof. Gajendra Singh Chauhan, Pilani Campus

Mr. Arjun Candrakant Halarnkar, K K Birla Goa Campus

Dr. Maya Vinai, Hyderabad Campus

ACCOUNTS & FINANCE SECTION

Head, Accounts & Finance

Mr. Satyen Sharma, Pilani Campus

Ms. Sunitha Suresh, Hyderabad Campus

Manager, Finance

Mr. V.N. Sharma, Pilani Campus

Mr. Mohammad Akram, Dubai Campus

Manager, MIS

Mr. Rahul Rastogi, Pilani Campus

Mr. Ian Francis Sardinha, K K Birla Goa Campus

Accounts Officers

Mr. Krishna Kumar Kedia, Pilani Campus

Chief Accountant

Mr. Mukesh Kumar Jangir, Pilani Campus

SECURITY SECTION - (Security Officers)

Mr. Kishore Singh, Pilani Campus

Mr. Pradip Kr. Yadav, K K Birla Goa Campus

Mr. Durga Shankar Chand, Hyderabad Campus

HUMAN RESOURCE SECTION

HR Managers

Mr. Arvind Soundarajan, Pilani Campus

Ms. Sonia Gaurav Nagarsekar, K K Birla Goa Campus

Ms. Vasundhari Alluri, Hyderabad Campus

Mr. Srikanth Sridhar, Hyderabad Campus

Mr. Abdul Khaleed Mohammad, WILP

FACULTY INCHARGE

Pilani Campus

Prof. Vishal Saxena, Institutional Knowledge Analysis Cell (IKA Cell) - Institute Wide

Prof. Yashvardhan Sharma, Information Processing Centre

Prof. Sheth Pratik N, Instrumentation Unit, Reprography

Prof. Virendra Singh Nirban, Public Relations

Dr. Pankaj Kumar Sharma VFAST, Transport & Cafeteria

Dr. Virendra Singh Shekhawat, Software Development & Educational Technology

Prof. Kuldip Singh Sangwan, Workshop

Prof. Shilpi Garg, Infant Care Centre and Institute Functions

Dr. Hari Babu Katakula, Timetable

K K Birla Goa Campus

Prof. Vinayak Shashikant Naik, Computer Centre

Dr. Rashmi Chauhan, Community Welfare

Hyderabad Campus

Prof. Arti Dhar, Community Welfare

Prof. R Gururaj, Computer Centre

Dr. Sashideep Gutti, Time Table & Exams

Centre for Innovation, Incubation & Entrepreneurship (CIIE)

Faculty-InCharge:

Prof. Satyendra Kumar Sharma, Pilani Campus

Dr. Trupti Swarup Gokhale, Dubai Campus)

Dr. Rajorshi Sen Gupta, K K Birla Goa Campus)

Prof. Aruna Malapati (Hyderabad Campus)

HEADS OF DEPARTMENTS

Pilani Campus

Prof. P R Deepa, Biological Sciences

Prof. Banasri Roy, Chemical Engineering

Prof. Ram Kinkar Roy, Chemistry

Prof. Anupam Singhal, Civil Engineering

Prof. Sudeept Mohan, Computer Science and Information Systems

Prof. Arun Kumar Giri, Economics and Finance

Prof. Hitesh Dutt Mathur, Electrical & Electronics Engineering and Instrumentation

Prof. Devika, Humanities and Social Sciences

Prof. Leela Rani, Management

Prof. Devendra Kumar, Mathematics

Prof. Mani Sankar Dasgupta, Mechanical Engineering

Prof. Hemant R Jadhav, Pharmacy

Prof. Rakesh Choubisa, Physics

K K Birla Goa Campus

Prof. Saroj Sundar Baral, Head, Department of Chemical Engineering.

Prof. Abhijit Jayant Pethe Head, Department of Electrical & Electronics Engineering

Prof. Ranjit Shankarrao Patil, Head, Department of Mechanical Engineering..

Prof. Vinayak Shashikant Naik, Head, Department of Computer Science and Information Systems

Prof. Srikanth Mutnuri, Head, Department of Biological Sciences

Prof. Halan Prakash, Head, Department of Chemistry

Prof. Aswini Kumar Mishra, Head, Department of Economics & Finance

Prof. Reena Cheruvalatha, Head, Department of Humanities & Social Sciences

Prof. Jajati Keshari Sahoo, Head, Department of Mathematics

Prof. Radhika Vatsan, Head, Department of Physics

Hyderabad Campus

Prof. I Sreedhar, Head, Dept. of Chemical Engineering

Prof. Murari Raja Raja Varma, Head, Dept. of Civil Engineering

Prof. Alivelu Manga Parimi, Head, Dept. of EEE

Prof. N Suresh Kumar Reddy, Head, Dept. of Mechanical Engineering

Prof. A Sajeli Begum, Head, Dept. of Pharmacy

Prof. G Geethakumari, Head, Dept. of Computer Science and Information Systems

Prof. Jayati Ray Dutta, Head, Dept. of Biological Sciences

Prof. Sounak Roy, Head, Dept. of Chemistry

Dr. Biswanath Dash, Head, Dept. Humanities and Social Sciences

Dr. Dushyant Kumar, Head, Economics and Finance

Prof. Pradyumn Kumar Sahoo, Head, Dept. of Mathematics

Prof. Sarmishtha Banik, Head, Dept. of Physics

Dubai Campus

Dr. Nishant Harishbhai Pandya, Head, Dept. of Chemical Engg.

Dr. Vivek Balachandra Kartha, Head, Dept. of Civil Engineering.

Dr. Jagadish Nayak, Head, Dept. of Electrical & Electronics Engg.

Dr. Priyank Upadhyaya, Head, Dept. of Mechanical Engineering.

Dr. Raja Muthalagu, Head, Dept. of Computer Science

Prof. Ramachandran Subramanian, Head, Dept. of Biotechnology

Prof. Geetha Kannan, Head, Dept. of General Sciences

Prof. Shazi Shah Jabeen, Head, Dept. of Humanities and Social Sciences

OFFICERS OF OTHER ACTIVITIES

Scholarships & Fellowship Committee (SFC): Prof. Srikanta Routory (Convener), Prof. Navin Singh, Prof. Suresh Gupta, Prof. Jitendra Singh Rathore, Prof. S.U. Belgamwar, Mr. Vidhu Arnav Singh, Mr. Abhinav Tyagi, Ms. Sunidhi Garg.

Scholarship Committee (SC), Dubai Campus: Prof. Priti Bajpai(Convener), Prof. K. Kumar, Prof. R. Karthikeyan, Dr. Naveen Kumar Shrivastava, Ms. Nahid Afshan, Mr. Mohammad Akram.

Students Aid Fund (SAF)

Prof. Srikanta Routroy (Convener), Prof. Navin Singh, Prof. Suresh Gupta, Prof. Jitendra Singh Rathore, Prof. S.U. Belgamwar, Mr. Yatik Gupta, Mr. Nishchay Shopurkar, Mr. Sparsh Wairya, Ms. Anushka Singh, Mr. Chinmay Agarwal, Mr. Deepak Jain.

Recreational Activity Forum (RAF), Pilani Campus

Prof. Srikanta Routroy (Incharge), Prof. Rahul Singhal, Prof Shilpi Garg, Mr. Atul Runthala, Mr. Ashish Gupta, Mr. Vishav, Mr. Vishal Kumar Jha, Mr. Akhilesh Parwal, Mr. Adya Pathak, Mr. U Aswathy, Mr. Raghav Kabra

Students Union (2021-22)

Mr. Harsh Shukla (President), Mr. Harsh Lamba (General Secretary)

Internal Complaints Committee, Pilani Campus: - Prof. Surekha Bhanot (Presiding Officer), Prof. Poonam Goyal, Dr. Meghana Tare, Ms. Rashmi Nanda, Mr. Arvind Soundarrajan, Dr. M. Kasturi, Ms. Latika Pranay Narvekar, Ms. Srishti Khare, Ms. Swathi B.

Committee for Combating Sexual Harassment Problems, Pilani Campus

Prof. Surekha Bhanot (Presiding Officer), Dr. Meghana Tare, Dr. ShibaniJha, Ms. Rashmi Nanda, Mr. Arvind Soundarrajan, Dr. M. Kasturi, Ms. Latika Pranay Narvekar, Ms. Srishti Khare, Ms. Swathi B.

Internal Complaints Committee for Prevention of Sexual Harassment of Women at Work Place

Dubai Campus:- Prof. Shazi Shah Jabeen - Convenor, Dr Gomathi B, Dr. Geetha**,** Prof. Priti Bajpai, Dr. Naveen Kumar Shrivastava, Ms. Reema Menon Vellat - External Member.

K K Birla Goa Campus:- Prof. Alamelu Geetha Krishnamurthy, Presiding Officer, Dr. Rashmi Chauhan., Member, Prof. Angshuman Sarkar, Member Mr. Baiju Krishnan, Member, Ms. Sonia Gaurav Nagarsekar, Member, Ms. Manisha Dias, External Member

Student Members: Ms. Sonakshi Gupta, Ms. Nisha K and Ms. Sandhya Basu

Hyderabad Campus: - Prof. M G Prasuna, Presiding Officer, Prof. Chittaranjan Hota, Member, Dr. Maya Vinai, Member, Ms. Amitha Malipeddi, Member, Mr. Durga Shankar Chand, Member, Ms. Kondaveeti Satyavathi, External Member.

Student Members: Ms. Jaspreet Kalra, Ms. Venessa Maurice Lobo, Ms. Sneha Tripathi.

ACADEMIC COUNSELLING CELL

Convener: Dr. G. Muthukumar

Professional Counselor: Mr. Emerson Noble Scott

Mentors (Core Members): Dr. Girish Kant, Dr. Priya C. Sande, Dr. Virendra Singh Shekhawat, Dr. Pawan Ajmera, Dr. Murali Monohar Pandey, Dr. Sunil Dubey, Dr. Rakhee, Dr. Ashish Tiwari, Prof. Sangeeta Sharma, Prof. Devika, Prof. Pushp Lata, Dr. Meghana Tare, Prof. Rajdeep Chowdhury, Dr. G Muthukumar, Dr. Bibhas Ranjan Sarkar, Dr. Sailaja Nandigama, Prof Kumar Neeraj Sachdeva, Dr. Muhammed P, Dr. Sangita Yadav

Auxiliary Members (Core Members): Prof Chandra Shekhar, Dr. Sudeshna Mukherjee

Central Analytical Laboratory (CAL)

Head, Dept. of Pharmacy (Prof. Hemant R Jadhav), Head, Dept. of Biological Sciences (Prof. P R Deepa), Head, Dept. of Chemistry (Prof. Ram Kinkar Roy), Head, Dept. of Physics (Prof. Rakesh Choubisa).

Technology Innovation Centre (TIC)

Prof. Hitesh Dutt Mathur

CENTRAL INSTRUMENTS FACILITY (CIF)

Coordinator: Prof. R. Mahesh

Faculty Incharge :

Prof. Ram Shanker Patel, K K Birla Goa Campus

Teaching Learning Centre (TLC)

Faculty Incharge:

Prof. Pushp Lata, Pilani Campus

Dr. Maneesha, Dubai Campus

Prof. Senthamarai Kannan Ethirajulu, K K Birla Goa Campus

Dr. Rahul Nigam, Hyderabad Campus

Members:

Pilani Campus: Dr. Manoj Kannan, Dr. Amol Marathe, Dr. Pankaj Kumar Sharma, Dr. Gautam Singhvi, Dr. Jayashree Mahesh, Dr. Rajan Pandey, Prof. Tapomoy Guha Sarkar **Mentors:** Prof. Chandra Shekhar, Prof. Arvind K. Sharma, Prof. Sanjiv Chaudhry

Dubai Campus:- Dr. Gomathi Bhavani Rajagopalan, Dr. Nishant Harishbhai Pandya, Dr. Sunil Thomas, Dr. Vincent Shantha Kumar

K K Birla Goa Campus:- Prof. Toby Joseph, Prof. Rayson K. Alex, Prof. Rajesh Mehrotra

Hyderabad campus: Prof. N.L.Bhanu Murthy, Prof. P.K. Thiruvikraman, Prof. Anasua Guharay, Dr. Sudha Radhika, Dr Aswathy Raveendran.

HOUSE ALLOTMENT COMMITTEE

Pilani Campus

Conventer: Prof. S.K. Verma,

Members: Prof. Dipendu Bhunia, Prof. Hitesh Dutt Mathur, Mr. Ashish Gupta

K K Birla Goa Campus

Chair Person: Prof. Mukund Keshavrao Deshmukh

Conventer: Mr. Anand Kallanna Patil

Members: Prof. Shibu Clement, Mr. Sailesh Narayan Mohanty, Ms. Sonia Gaurav Nagarsekar

Hyderabad Campus

Convener: Prof Niranjan Swain (Dean, Administration)

Members: Prof. Sridhar Raju, Prof. Meenakshi Vishwanathan, Prof. A Ramesh Babu, Prof. Alivelu Manga Parimi, Dr Phaneendra Kiran Chaganti, Manager, HR, Mr. B Muthukrishnan, Mr. C Balireddy and Office Superintendent, GAU

The committee for the selection of faculty members of BITS Pilani – Pilani Campus for the "Additional Competitive Research Grant"

Prof. Chandra Shekhar, EEE Dept., (Convener), Prof. Sudeept Mohan, Prof. Kuldip Singh Sangwan, Prof. Dalip Kumar, Prof. Jitendra Panwar, Prof. Navneet Gupta

PURCHASE COMMITTEE

Pilani Campus :- Prof. N.V. Muralidhar Rao (Convenor), Prof. Sudhirkumar Barai, Prof. S.K. Verma and Mr. Satyen Sharma.

Dubai Campus : Prof. Srinivasan M.P. (Chairman), Prof. K.K. Singh (Vice Chairman), Mr. Akshay Chutani (Convener), Mr. Mohammad Akram (Member), Dr. Vilas Haridas Gaidhane (Member).

K K Birla Goa Campus: Prof. Dhananjay Madhukar Kulkarni, Dean Administration (Convenor), Mr. Surendra Kinlekar (Member)

Hyderabad Campus: Prof. A Ramesh Babu (Convener), Prof. KVG Chandrasekhar (Member), Dr. Trinath Jamma (Member), Dr. Soumya J (Member), Dr. Vivek Sharma (Member), Dr. Bahurudeen (Member), Dr. Kurra Suresh (Member), Ms. Sunitha Suresh Head Accounts & Finance

Centre for Robotics & Intelligent System

Dr. Bijay Kumar Rout (Coordinator), Prof. Sudeept Mohan (nucleus member), and Dr. Arshad Javed (nucleus member)

Centre for Desert Development Technologies: Prof. Rajiv Gupta (Coordinator), Shri Gyanendra Singh, Shri Shiv N. Sanwal, Shri K. C. Sacheti, Shri Pradeep Bishnoi, Prof. Surekha Bhanot, Prof. Kuldip Singh Sangwan.

Centre for Materials Science & Technology

Prof. Mani Shankar Dasgupta

Centre for Renewable Energy and Environment Development (CREED)

Dr. Manojkumar Surajkaranji Soni (Coordinator), Dr. Hari Om Bansal, Dr. Hitesh Datt Mathur, Dr. Pratik N. Sheth, Dr. Rajneesh Kumar

Embedded Controller Application Centre

Dr. Vinay Chamola, Mr. Devesh Samaiya (Incharge), Dr. Meetha Shenoy

Staff Association

Dr. Amit Jain (Acting President & Vice President), Dr. Krishnendra Shekhawat (Secretary), Dr. Murali Manohar Pandey (Joint Secretary), Mr. Satyen Sharma (Treasurer), Dr. Bibhas Ranjan Sarkar (Member), Dr. Meghna Tare (Member), Dr. Arun Jalan (Co-opted Member), Dr. Navin Singh (Ex-officio)

Auditors of the Institute

Statutory Auditors - M/s. S.R. Batliboi & Associates, LLP, Gurgaon

Internal Auditors - M/s. Aneja Management Consultants Pvt Ltd, Mumbai

BITS COOP

Prof. Sudhirkumar Barai (President),

Prof. Sanjay Kumar Verma (Vice-President)

Prof. Jitendra Panwar (Secretary)

Prof. Hitesh Dutt Mathur (Treasurer).

MEDICAL CENTRE

Pilani Campus: Dr. (Mrs.) Sanjana R. Bhat Gynecologist (Deputy CMO) and Dr. Bibin Chandran (Medical Officer)

Visiting Doctors: Dr. Sanjay Katewa (Dentist), Dr. H.S. Sankhla (ENT Specialist), Dr. Diwakar Pathak (Homeopathic Specialist), Dr. Karan Beniwal (Pediatrician), Dr. Ramesh P Jajoo (Ayurvedic).

K K Birla Goa Campus: Dr. Raghavendra K M (Chief Medical Officer), Dr. Nayana V Kantak (Medical Officer), Dr. Steffi Soares (Medical Officer), Dr. Shradha Anand Naik (Medical Officer), Dr. Prajyot S Mahale and Dr. Babasaheb D Kumbhar (Medical Officer, General Duty)

***Visiting Doctors*:** Dr. Sandeep Fowkar (Orthopaedic), Dr. Shailesh Kamat (OBG), Dr. Sreedhara Hande (Paediatrician), Dr. Jis Jolly Jose (Paediatrician), Dr. Parag Sawant (ENT), Dr. Simantini Sakhardande (Dermatology), Dr. Kelly Nortan (Dental Science), Dr. Anshu Vijayvargia (Physiotherapy).

Hyderabad Campus:- Dr. G Kalyan Kumar (Dy. Chief Medical Officer), Dr. Kishore Kumar Misra, Medical Consultant, Dr. Jenny Mercy Augustine (Medical Officer), Dr. Kasimkota Nagajyothi (Medical Officer), Dr. D Radhika (Medical Officer), Dr. Uthej N (Medical Officer).

Visiting Doctors:- Dr. E Chandrakala, Dr. Swathi V, Dr. Satyendra Kumar

Visiting Doctors: Dr. E Chandrakala, Dr. Swathi V, Dr. Satyendra Kumar

Dubai Campus:- *Visiting Doctors:-* Dr. Farid, Dr. Nitya.

CERTAIN OTHER ORGANISATIONS IN PILANI

Birla Sarvajanik Hospital: Dr. R. K. Jain (Sr. General surgeon)/CMO, Dr. B. Pal (Anaesthetist), Dr. Ajay kr.Agarwal (Orthopeadician), Dr. Srishti jain (Gynaecologist), Dr. Rajendra Sharma (Physician), Dr. Chaturbhuj Singh Rathore (Paediatrician),Dr.Usha Sehrawat (ENT surgeon), Dr. Kiranmayee Thirunagari (Pathologist), Dr. Pawan Kumar Gupta (GDMO), Dr. Sanjay kumar (GDMO) Dr. Ramesh. P. Jajoo (Ayurveda), Dr. Moin Khan (GDMO), Dr. Hemant Kumar (GDMO), Dr. Rakesh Kumar (Physiotherapist),

Specialist Visiting Doctors: Dr. Mukesh Yadav (Cardiologist), Dr Vijay Binwal (Nephrologists), Dr. Anil Sharma (Urologist), Dr. Anil Kumar Jangir (Gastroenterology and Hepatologist), Dr. Sandeep Dudi (Psychiatrist),

Shri Mahadeo Singhi Eye Hospital: Dr. P.K. Sehgal (CMO), Dr. Amitabh Chakrabarti, Dr. G. B. Mathur, Dr. Basant Sharma (Dental Surgeon).

Birla Science Centre: Dr. V.N. Dhaulakhandi

Central Electronics Engineering Research Institute (CEERI): Dr. P C Panchariya

DISCIPLINE-WISE LIST OF FACULTY

Name	Designation	Campus
BIOLOGICAL SCIENCES		
Suman Kapur, Ph.D.	Senior Professor	Hyderabad
Samit Chattopadhyay, Ph.D.	Senior Professor	Goa
Ashis Kumar Das , Ph.D.	Professor	Pilani
Jitendra Panwar , Ph.D.	Professor	Pilani
P R Deepa , Ph.D.	Professor	Pilani
Prabhat Nath Jha , Ph.D.	Professor	Pilani
Sanjay Kumar Verma , Ph.D.	Professor	Pilani
Shibasish Chowdhury , Ph.D.	Professor	Pilani
Vishal Saxena , Ph.D.	Professor	Pilani
Utpal Roy, Ph.D.	Professor	Goa
Meenal Kowshik, Ph.D.	Professor	Goa
Srikanth Mutnuri, Ph.D.	Professor	Goa
Dibakar Chakrabarty, Ph.D.	Professor	Goa
Vijayashree Nayak, Ph.D.	Professor	Goa
Angshuman Sarkar, Ph.D.	Professor	Goa
Rajesh Mehrotra, Ph.D.	Professor	Goa
Vidya Rajesh, Ph.D.	Professor	Hyderabad
Ramakrishna Vadrevu, Ph.D.	Professor	Hyderabad
Nishith Gupta,Ph.D	Professor	Hyderabad
B Vani , Ph.D.	Associate Professor	Pilani
Rajdeep Chowdhury , Ph.D.	Associate Professor	Pilani
Rita Sharma , Ph.D.	Associate Professor	Pilani
Shilpi Garg , Ph.D.	Associate Professor	Pilani
Sudeshna Mukherjee , Ph.D.	Associate Professor	Pilani
Syamantak Majumder , Ph.D.	Associate Professor	Pilani
Uma S Dubey , Ph.D.	Associate Professor	Pilani
Judith Maria Braganca, Ph.D.	Associate Professor	Goa
Veeky Baths, Ph.D.	Associate Professor	Goa
Anasuya Ganguly, Ph.D.	Associate Professor	Goa
Arnab Banerjee, Ph.D.	Associate Professor	Goa
Sumit Biswas, Ph.D.	Associate Professor	Goa
Kundan Kumar, Ph.D.	Associate Professor	Goa
Sandhya Mehrotra, Ph.D.	Associate Professor	Goa
Malabika Biswas, Ph.D.	Associate Professor	Goa
Sukanta Mondal, Ph.D.	Associate Professor	Goa
Indrani Talukdar, Ph.D.	Associate Professor	Goa
Jayati Ray Dutta, Ph.D.	Associate Professor	Hyderabad
Kumar Pranav Narayan, Ph.D.	Associate Professor	Hyderabad
Sankar Ganesh P, Ph.D.	Associate Professor	Hyderabad

Name	Designation	Campus
Naga Mohan Kommu, Ph.D.	Associate Professor	Hyderabad
Sridev Mohapatra, Ph.D.	Associate Professor	Hyderabad
Debasri Bandyopadhyay, Ph.D.	Associate Professor	Hyderabad
Balakumaran Chandrasekar , Ph.D.	Assistant Professor, Gr-I	Pilani
Manoj Kannan, Ph.D.	Assistant Professor, Gr-I	Pilani
Meghana Tare , Ph.D.	Assistant Professor, Gr-I	Pilani
Mukul Joshi , Ph.D.	Assistant Professor, Gr-I	Pilani
Pankaj Kumar Sharma , Ph.D.	Assistant Professor, Gr-I	Pilani
Sandhya Marathe , Ph.D.	Assistant Professor, Gr-I	Pilani
Indrani Talukdar, Ph.D.	Assistant Professor, Gr-I	Goa
Raviprasad Aduri, Ph.D.	Assistant Professor, Gr-I	Goa
Tusar Tirtha Saha, Ph.D.	Assistant Professor, Gr-I	Goa
Vivek Sharma, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Jamma Trinath, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Gireesha Thipperudrappa Mohannath, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Ruchi Jain Dey, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Piyush Khandelia, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Pragya Komal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Shuvadeep Maity, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Kirtimaan Syal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
BIOTECHNOLOGY		
Dawood Jalaluddin Shariff, Ph.D.	Professor	Dubai
Neeru Sood, Ph.D.	Professor	Dubai
Ramachandran Subramanian, Ph.D.	Associate Professor	Dubai
Trupti Swarup Gokhale, Ph.D.	Associate Professor	Dubai
Pallab Sanpui, Ph.D.	Assistant Professor	Dubai
Mainak Dutta, Ph.D.	Assistant Professor	Dubai
CHEMICAL ENGINEERING		
Suresh Gupta , Ph.D.	Professor	Pilani
Srinivas Krishnaswamy, Ph.D.	Professor	Goa
Sutapa Roy Ramanan, Ph.D.	Professor	Goa
Saroj Sundar Baral, Ph.D.	Professor	Goa
Jaideep Chatterjee, Ph.D	Professor	Hyderabad
I Sreedhar, Ph.D.	Professor	Hyderabad
Srikanta Dinda, Ph.D.	Professor	Hyderabad
Bandi Venkata Prasad , Ph.D.	Professor	OC-WILP
Arvind Kumar Sharma , Ph.D.	Associate Professor	Pilani
Banasri Roy , Ph.D.	Associate Professor	Pilani
Hare Krishna Mohanta , Ph.D.	Associate Professor	Pilani
Pradipta Chattopadhyay , Ph.D.	Associate Professor	Pilani
Pratik Nitinchandra Sheth , Ph.D.	Associate Professor	Pilani

Name	Designation	Campus
Smita Raghuvanshi , Ph.D.	Associate Professor	Pilani
Prakash Kumar Beri, Ph.D.	Associate Professor	Dubai
Sampatrao Dagu Manjare, Ph.D.	Associate Professor	Goa
Sharad Mahadeo Sontakke, Ph.D.	Associate Professor	Goa
Balaji Krishnamurthy, Ph.D.	Associate Professor	Hyderabad
Ramesh Babu Adusumalli, Ph.D.	Associate Professor	Hyderabad
Karthik Venkateshan, Ph.D.	Associate Professor	Hyderabad
Vikranth Kumar Surasani, Ph.D.	Associate Professor	Hyderabad
Nishant Harishbhai Pandya, Ph.D.	Assistant Professor	Dubai
Eldhose Iype, Ph.D.	Assistant Professor	Dubai
Murchana Changmai, Ph.D.	Assistant Professor	Dubai
Ajaya Kumar Pani , Ph.D.	Assistant Professor, Gr-I	Pilani
Amit Jain , Ph.D.	Assistant Professor, Gr-I	Pilani
Arkaprovo Ghosal, Ph.D.	Assistant Professor, Gr-I	Pilani
Bhanu Vardhan Reddy Kuncharam, Ph.D.	Assistant Professor, Gr-I	Pilani
Etika Krishna Chaitanya , Ph.D.	Assistant Professor, Gr-I	Pilani
Priya Christina S , Ph.D.	Assistant Professor, Gr-I	Pilani
Sarbani Ghosh , Ph.D.	Assistant Professor, Gr-I	Pilani
Somak Chatterjee , Ph.D.	Assistant Professor, Gr-I	Pilani
Srinivas Appari , Ph.D.	Assistant Professor, Gr-I	Pilani
K Santosh Sopanrao , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Samir Ramdas Kale , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Manjuri Kumar, Ph.D.	Assistant Professor, Gr-I	Goa
Jegatha Nambi Krishnan, Ph.D.	Assistant Professor, Gr-I	Goa
Asima Shaukat, Ph.D.	Assistant Professor, Gr-I	Goa
Vivek Rangarajan, Ph.D.	Assistant Professor, Gr-I	Goa
Pradeep Kumar Sow, Ph.D.	Assistant Professor, Gr-I	Goa
Richa Singhal, Ph.D.	Assistant Professor, Gr-I	Goa
Anirban Roy, Ph.D.	Assistant Professor, Gr-I	Goa
Amol Anilrao Deshpande, Ph.D.	Assistant Professor, Gr-I	Goa
Paramita Haldar, Ph.D.	Assistant Professor, Gr-I	Goa
Sundari R., Ph.D.	Assistant Professor, Gr-I	Goa
Riju De, Ph.D.	Assistant Professor, Gr-I	Goa
D Purnima, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Amarthaluri Satyapaul Singh, Ph.D.	Assistant Professor, Gr-I	Hyderabad
B Nandini, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Arnab Dutta, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Afkham Mir, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Debirupa Mitra, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Iyman Abrar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Ramendra Kishor Pal, Ph.D.	Assistant Professor, Gr-I	Hyderabad

Name	Designation	Campus
Pankaj Kumar,Ph.D	Assistant Professor, Gr-II	Hyderabad
CHEMISTRY		
G Sundar, Ph.D.	Senior Professor & Director	Hyderabad
Ramaiah D, Ph.D	Senior Professor	Hyderabad
Ajay Kumar Sah , Ph.D.	Professor	Pilani
Anil Kumar , Ph.D.	Professor	Pilani
Dalip Kumar , Ph.D.	Professor	Pilani
I R Laskar , Ph.D.	Professor	Pilani
Ram Kinkar Roy , Ph.D.	Professor	Pilani
Seshadri Chandrasekara Sivasubramanian, Ph.D.	Professor	Pilani
Sunil Bhand, Ph.D.	Professor	Goa
Narendra Nath Ghosh, Ph.D.	Professor	Goa
Bhavana P., Ph.D.	Professor	Goa
Anjan Chattopadhyay, Ph.D.	Professor	Goa
Mainak Banerjee, Ph.D.	Professor	Goa
Amrita Chatterjee, Ph.D.	Professor	Goa
N Rajesh, Ph.D.	Professor	Hyderabad
Sumithra Kanakamma, Ph.D.	Professor	Hyderabad
Subit Kumar Saha, Ph.D.	Professor	Hyderabad
Anupam Bhattacharya, Ph.D.	Professor	Hyderabad
K V G Chandra Sekhar, Ph.D.	Professor	Hyderabad
Manab Chakravarty, Ph.D.	Professor	Hyderabad
Bharti Khungar , Ph.D.	Associate Professor	Pilani
Indresh Kumar , Ph.D.	Associate Professor	Pilani
Madhushree Sarkar , Ph.D.	Associate Professor	Pilani
Paritosh Shukla , Ph.D.	Associate Professor	Pilani
Prashant U Manohar , Ph.D.	Associate Professor	Pilani
Rajeev Sakhuja , Ph.D.	Associate Professor	Pilani
Saumi Ray , Ph.D.	Associate Professor	Pilani
Shamik Chakraborty , Ph.D.	Associate Professor	Pilani
Surojit Pande , Ph.D.	Associate Professor	Pilani
Raghu Nath Behera, Ph.D.	Associate Professor	Goa
Ranjan Dey, Ph.D.	Associate Professor	Goa
Rabi Narayan Panda, Ph.D.	Associate Professor	Goa
Prakash Halan, Ph.D.	Associate Professor	Goa
Subhadeep Banerjee, Ph.D.	Associate Professor	Goa
Subbalakshmi Jayanty, Ph.D.	Associate Professor	Hyderabad
Krishnan R, Ph.D.	Associate Professor	Hyderabad
Ramakrishnan Ganesan, Ph.D.	Associate Professor	Hyderabad
Amit Nag, Ph.D.	Associate Professor	Hyderabad
Sounak Roy, Ph.D.	Associate Professor	Hyderabad

Name	Designation	Campus
Balaji Gopalan, Ph.D.	Associate Professor	Hyderabad
Durba Roy, Ph.D.	Associate Professor	Hyderabad
Bibhas Ranjan Sarkar , Ph.D.	Assistant Professor, Gr-I	Pilani
Mrinmoyee Basu , Ph.D.	Assistant Professor, Gr-I	Pilani
Partha Sarathi Addy , Ph.D.	Assistant Professor, Gr-I	Pilani
Tincy Lis Thomas, Ph.D.	Assistant Professor, Gr-I	Goa
Rashmi Chauhan, Ph.D.	Assistant Professor, Gr-I	Goa
Jayadevan Kampurath Poduvattil, Ph.D.	Assistant Professor, Gr-I	Goa
Subhasish Roy, Ph.D.	Assistant Professor, Gr-I	Goa
Vankayala Kiran, Ph.D.	Assistant Professor, Gr-I	Goa
Tanmay Chatterjee, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Himanshu Aggarwal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Chanchal Chakraborty, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Nilanjan Dey, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Arijit Mukherjee, Ph.D.	Assistant Professor, Gr-I	Hyderabad
CIVIL ENGINEERING		
Sudhirkumar Barai, Ph.D.	Senior Professor & Director	Pilani
Rajiv Gupta, Ph.D.	Senior Professor	Pilani
Ajit Pratap Singh , Ph.D.	Professor	Pilani
Anupam Singhal , Ph.D.	Professor	Pilani
Ravi Kant Mittal , Ph.D.	Professor	Pilani
S B Singh , Ph.D.	Professor	Pilani
P N Rao, Ph. D	Professor	Hyderabad
Vasan A, Ph.D.	Professor	Hyderabad
Komaragiri Srinivasa Raju, Ph. D	Professor	Hyderabad
Anshuman , Ph.D.	Associate Professor	Pilani
Dipendu Bhunia , Ph.D.	Associate Professor	Pilani
Manoj Kumar , Ph.D.	Associate Professor	Pilani
Shibani Khanra Jha , Ph.D.	Associate Professor	Pilani
Shuvendu Narayan Patel , Ph.D.	Associate Professor	Pilani
V R Vinayaka Ram, Ph.D.	Associate Professor	Hyderabad
Jagadeesh Anmala, Ph.D.	Associate Professor	Hyderabad
Sridhar R, Ph.D.	Associate Professor	Hyderabad
Chandu Parimi, Ph.D.	Associate Professor	Hyderabad
Arkamitra Kar, Ph.D.	Associate Professor	Hyderabad
Bahurudeen A, Ph.D.	Associate Professor	Hyderabad
Anasua Guharay, Ph.D.	Associate Professor	Hyderabad
Meghana Charde, Ph.D.	Assistant Professor	Dubai
Vivek Balachandra Kartha, Ph.D.	Assistant Professor	Dubai
Deepthi Mary Dilip, Ph.D.	Assistant Professor	Dubai
Brij Kishor Pandey,Ph.D.	Assistant Professor	Dubai

Name	Designation	Campus
Akshay Venkateshwaran, Ph.D.	Assistant Professor	Dubai
Durgesh Vikram , Ph.D.	Assistant Professor, Gr-I	Pilani
Kamalesh Kumar , Ph.D.	Assistant Professor, Gr-I	Pilani
Md Rushdie Ibne Islam , Ph.D.	Assistant Professor, Gr-I	Pilani
Mukund Lahoti , Ph.D.	Assistant Professor, Gr-I	Pilani
Muthukumar G , Ph.D.	Assistant Professor, Gr-I	Pilani
Nishant Roy , Ph.D.	Assistant Professor, Gr-I	Pilani
Rajesh Kumar , Ph.D.	Assistant Professor, Gr-I	Pilani
Rallapalli Srinivas, Ph.D.	Assistant Professor, Gr-I	Pilani
Sarah Mariam Abraham , Ph.D.	Assistant Professor, Gr-I	Pilani
Sayantan Chakraborty , Ph.D.	Assistant Professor, Gr-I	Pilani
Shashank B S , Ph.D.	Assistant Professor, Gr-I	Pilani
Subhasis Pradhan , Ph.D.	Assistant Professor, Gr-I	Pilani
Vijay Bajirao Kakade, Ph.D.	Assistant Professor, Gr-I	Pilani
Mahesh Kumar Hamirwasia , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Murari Raja Raja Varma, Ph.D.	Assistant Professor, Gr-I	Hyderabad
K Rajitha, Ph.D	Assistant Professor, Gr-I	Hyderabad
Mohan S C, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Bandhan Bandhu Majumdar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Prasanta Kumar Sahu, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Shivang Shekhar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
P Raghu, Ph.D.	Assistant Professor, Gr-I	Hyderabad
COMPUTER SCIENCE, INFORMATION SYSTEMS & SOFTWARE SYSTEMS		
Ashwin Srinivasan, Ph.D.	Senior Professor	Goa
Janardan Prasad Misra, M.E.	Professor	Pilani
Navneet Goyal , Ph.D.	Professor	Pilani
Poonam Goyal , Ph.D.	Professor	Pilani
Sudeept Mohan , Ph.D.	Professor	Pilani
Sangili Vadivel, Ph.D.	Professor	Dubai
Vijayakumar Balakrishnan, Ph.D.	Professor	Dubai
Neena Goveas, Ph.D.	Professor	Goa
Bharat Madhusudan Deshpande, Ph.D.	Professor	Goa
Vinayak Shashikant Naik, Ph.D.	Professor	Goa
Chittaranjan Hota , Ph.D.	Professor	Hyderabad
Lalita Bhanu Murthy Neti, Ph.D.	Professor	Hyderabad
Mukesh Kumar Rohil , Ph.D.	Associate Professor	Pilani
Yashvardhan Sharma , Ph.D.	Associate Professor	Pilani
Gopalakrishnan Venkiteswaran , Ph.D.	Associate Professor	OC-WILP
Anindya Neogi , Ph.D.	Associate Professor-OC	OC-WILP
Anita Ramachandran , M.Tech.	Associate Professor-OC	OC-WILP
Chetana Anoop Gavankar , Ph.D.	Associate Professor-OC	OC-WILP

Name	Designation	Campus
K Venkatasubramanian , M.E.	Associate Professor-OC	OC-WILP
Lucy J. Gudino , Ph.D.	Associate Professor-OC	OC-WILP
Nishit Narang , M.S.	Associate Professor-OC	OC-WILP
Ramakrishna Dantu, Ph.D.	Associate Professor-OC	OC-WILP
Srinath R.Naidu , Ph.D.	Associate Professor-OC	OC-WILP
Sugata Ghosal , Ph.D.	Associate Professor-OC	OC-WILP
Venkateswara Rao Thunuguntla , M.Tech.	Associate Professor-OC	OC-WILP
Y V K Ravi Kumar , Ph.D.	Associate Professor-OC	OC-WILP
Sanjay Kumar Sahay, Ph.D.	Associate Professor	Goa
Biju K. Raveendran Nair, Ph.D.	Associate Professor	Goa
Basabdatta Bhattacharya, Ph.D.	Associate Professor	Goa
Snehanshu Saha, Ph.D.	Associate Professor	Goa
R Gururaj, Ph.D.	Associate Professor	Hyderabad
G Geethakumari, Ph.D.	Associate Professor	Hyderabad
Aruna Malapati, Ph.D.	Associate Professor	Hyderabad
Tathagata Ray, Ph.D.	Associate Professor	Hyderabad
Abhishek Mishra , Ph.D.	Assistant Professor, Gr-I	Pilani
Amit Dua , Ph.D.	Assistant Professor, Gr-I	Pilani
Amitesh Singh Rajput, Ph.D.	Assistant Professor, Gr-I	Pilani
Ashutosh Bhatia , Ph.D.	Assistant Professor, Gr-I	Pilani
Avinash Gautam , Ph.D.	Assistant Professor, Gr-I	Pilani
Hari Babu Kotakula , Ph.D.	Assistant Professor, Gr-I	Pilani
J. Jennifer Ranjani , Ph.D.	Assistant Professor, Gr-I	Pilani
Jagat Sesh Challa , Ph.D.	Assistant Professor, Gr-I	Pilani
Kamlesh Tiwari , Ph.D.	Assistant Professor, Gr-I	Pilani
L Rajya Lakshmi, Ph.D.	Assistant Professor, Gr-I	Pilani
Pratik Narang , Ph.D.	Assistant Professor, Gr-I	Pilani
Rajesh Kumar , Ph.D.	Assistant Professor, Gr-I	Pilani
Shashank Gupta , Ph.D.	Assistant Professor, Gr-I	Pilani
Sundaresan Raman , Ph.D.	Assistant Professor, Gr-I	Pilani
Tanmaya Mahapatra, Ph.D.	Assistant Professor, Gr-I	Pilani
Vandana Agarwal , Ph.D.	Assistant Professor, Gr-I	Pilani
Vinti Agarwal, Ph.D.	Assistant Professor, Gr-I	Pilani
Virendra Singh Shekhawat , Ph.D.	Assistant Professor, Gr-I	Pilani
Vishal Gupta , Ph.D.	Assistant Professor, Gr-I	Pilani
Ankur Pachauri, Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Chandra Shekar R K , M.Tech.	Assistant Professor,(OC)-Gr-I	OC-WILP
Jyotsana Grover, Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Monali Tushar Mavani , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Pradheep Kumar K , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Pravin Yashwant Pawar , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP

Name	Designation	Campus
Ritu Arora , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
S.P.Vimal , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Sai Kishor Jangiti , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Vineet Kumar Garg , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Siddhaling Urolagin, Ph.D.	Assistant Professor	Dubai
Sujala Deepak Shetty, Ph.D.	Assistant Professor	Dubai
Angel Arul Jothi Joseph, Ph.D.	Assistant Professor	Dubai
Raja Muthalagu, Ph.D.	Assistant Professor	Dubai
Rahul Chengot Sankaramenon, Ph.D	Assistant Professor	Dubai
Tamizharasan Periyasamy,Ph.D	Assistant Professor	Dubai
Pranav Mothabhau Pawar, Ph.D.	Assistant Professor	Dubai
Rahul Pramanik, Ph.D.	Assistant Professor	Dubai
Pramod Gaur, Ph.D.	Assistant Professor	Dubai
Ramprasad Savlaram Joshi, Ph.D.	Assistant Professor, Gr-I	Goa
A. Baskar, Ph.D.	Assistant Professor,Gr-I	Goa
Shubhangi Krushnachandra Gawali, Ph.D.	Assistant Professor,Gr-I	Goa
Swati Agarwal, Ph.D.	Assistant Professor,Gr-I	Goa
Soumyadip Bandyopadhyay, Ph.D.	Assistant Professor,Gr-I	Goa
Anup Basil Mathew, Ph.D.	Assistant Professor,Gr-I	Goa
Kanchan Manna, Ph.D.	Assistant Professor,Gr-I	Goa
Sravan Danda, Ph.D.	Assistant Professor,Gr-I	Goa
Tanmay Tulsidas Verlekar, Ph.D.	Assistant Professor,Gr-I	Goa
Sougata Sen, Ph.D.	Assistant Professor,Gr-I	Goa
Swaroop Ravindra Joshi, Ph.D.	Assistant Professor,Gr-I	Goa
Sujith Thomas, Ph.D.	Assistant Professor,Gr-I	Goa
Surjya Ghosh, Ph.D.	Assistant Professor,Gr-I	Goa
Barsha Mitra, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Suvadip Batabyal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Subhrakanta Panda, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Lov Kumar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
J Jabez Christopher, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Paresh Saxena, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Rajib Ranjan Maiti, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Manjanna B	Assistant Professor, Gr-I	Hyderabad
Manik Gupta	Assistant Professor, Gr-I	Hyderabad
Dipanjan Chakraborty	Assistant Professor, Gr-I	Hyderabad
Venkatakrishnan Ramaswamy, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Apurba Das, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Raghunath Reddy Madireddy, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Ayan Das, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Akanksha Bharadwaj , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP

Name	Designation	Campus
Akshaya G , M.E.	Assistant Professor(OC)-Gr-II	OC-WILP
Ashish Narang , M.E.	Assistant Professor(OC)-Gr-II	OC-WILP
Chennupati Rakesh Prasanna , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Febin A Vahab , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Mohammad Saleem Bagewadi , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Preethi N. G , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Raja Vadhana P , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Seetha Parameswaran , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Sonika Chandrakant Rathi , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Swarna Chaudhary , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Vijayalakshmi Anand , M.E.	Assistant Professor(OC)-Gr-II	OC-WILP
Tirtharaj Dash, M.Tech.	Assistant Professor, Gr-II	Goa
Rizwan Parveen, M.E.	Assistant Professor, Gr-II	Goa
Hemant Rathore, M.E.	Assistant Professor, Gr-II	Goa
Pritam Bhattacharya, M.Sc.	Assistant Professor, Gr-II	Goa
Abhishek Kr Singh, Ph.D.	Assistant Professor, Gr-II	Goa
D V N Siva Kumar, M.Tech	Assistant Professor, Gr-II	Hyderabad
Mrityunjay Singh, M.Tech	Assistant Professor, Gr-II	Hyderabad
Vidyapu Sandeep, M.Tech	Assistant Professor, Gr-II	Hyderabad
Narasimha Bolloju, Ph.D.	Visiting Professor	Hyderabad
Raj Kumar Jaiswal, Ph.D.	Visiting Assistant Professor	Goa
Sapna Sadhwani, M.Tech..	Lecturer	Dubai
ELECTRICAL & ELECTRONICS ENGINEERING		
Gunaje Raghurama, Ph.D.	Senior Professor	Goa
Chandra Shekhar , Ph.D.	Sr. Professor Emeritus	Pilani
Anu Gupta , Ph.D.	Professor	Pilani
Hari Om Bansal , Ph.D.	Professor	Pilani
Hitesh Datt Mathur , Ph.D.	Professor	Pilani
Navneet Gupta , Ph.D.	Professor	Pilani
S Gurunarayanan, Ph.D.	Professor	Pilani
Surekha Bhanot , Ph.D.	Professor	Pilani
V K Chaubey , Ph.D.	Professor	Pilani
Sindhu S , Ph.D.	Professor	OC-WILP
Thoppil George Thomas, Ph.D.	Professor	Dubai
Mukund Keshavrao Deshmukh, Ph.D.	Professor	Goa
Dipankar Pal, Ph.D.	Professor	Goa
Anupama Karuppiah, Ph.D.	Professor	Goa
Srinivas M B, Ph.D.	Professor	Hyderabad
Subhendu Kumar Sahoo, Ph.D.	Professor	Hyderabad
Sanket Goel, M.B.A.	Professor	Hyderabad
Abhijit Rameshwar Asati , Ph.D.	Associate Professor	Pilani

Name	Designation	Campus
Dheerendra Singh , Ph.D.	Associate Professor	Pilani
Karunesh Kumar Gupta , Ph.D.	Associate Professor	Pilani
Praveen Kumar A.V. , Ph.D.	Associate Professor	Pilani
Rahul Singhal , Ph.D.	Associate Professor	Pilani
Rajneesh Kumar , Ph.D.	Associate Professor	Pilani
Gopala Krishna Koneru , M.Tech.	Associate Professor-OC	OC-WILP
Satya Sudhakar Yedlapalli , Ph.D.	Associate Professor-OC	OC-WILP
Jagadish Nayak, Ph.D.	Associate Professor	Dubai
Kalaichelvi Venkatesan, Ph.D.	Associate Professor	Dubai
Anita Bhagirathji Agrawal, Ph.D.	Associate Professor	Goa
Amalin Prince A., Ph.D.	Associate Professor	Goa
Ramesha C.K., Ph.D.	Associate Professor	Goa
Abhijit Jayant Pethe, Ph.D.	Associate Professor	Goa
Nitin Sharma, Ph.D.	Associate Professor	Goa
BVVSN Prabhakar Rao, Ph.D.	Associate Professor	Hyderabad
Alivelu Manga Parimi, Ph.D.	Associate Professor	Hyderabad
Prasant Kumar Pattnaik, Ph.D.	Associate Professor	Hyderabad
Runa Kumari, Ph.D.	Associate Professor	Hyderabad
Venkateswaran Rajagopalan, Ph.D.	Associate Professor	Hyderabad
Surya Shankar Dan, Ph.D.	Associate Professor	Hyderabad
Abdul Rajak Abdul Ravoof, Ph.D.	Assistant Professor	Dubai
Sunil Thomas, Ph.D.	Assistant Professor	Dubai
Vilas Haridas Gaidhane, Ph.D.	Assistant Professor	Dubai
Shazia Hasan, Ph.D.	Assistant Professor	Dubai
Gomathi Bhavani Rajagopalan, Ph.D.	Assistant Professor	Dubai
Swarnalatha Rajaguru, Ph.D.	Assistant Professor	Dubai
Nilesh Goel, Ph.D.	Assistant Professor	Dubai
Aditya Raw Gautam , Ph.D.	Assistant Professor, Gr-I	Pilani
Anantha Krishna Chintanpalli , Ph.D.	Assistant Professor, Gr-I	Pilani
Arnab Hazra , Ph.D.	Assistant Professor, Gr-I	Pilani
Ashish Patel , Ph.D.	Assistant Professor, Gr-I	Pilani
Bijoy Krishna Mukherjee , Ph.D.	Assistant Professor, Gr-I	Pilani
Kishor Bhaskarrao Nandapurkar , Ph.D.	Assistant Professor, Gr-I	Pilani
Meetha V. Shenoy , Ph.D.	Assistant Professor, Gr-I	Pilani
Nitin Chaturvedi , Ph.D.	Assistant Professor, Gr-I	Pilani
Pankaj Arora , Ph.D.	Assistant Professor, Gr-I	Pilani
Pawan Kamalkishor Ajmera , Ph.D.	Assistant Professor, Gr-I	Pilani
Puneet Mishra , Ph.D.	Assistant Professor, Gr-I	Pilani
Rahul Kumar, Ph.D.	Assistant Professor, Gr-I	Pilani
Sai Sesha Chalapathi Gattupalli, Ph.D.	Assistant Professor, Gr-I	Pilani
Sainath Bitragunta , Ph.D.	Assistant Professor, Gr-I	Pilani

Name	Designation	Campus
Samatha Benedict, Ph.D.	Assistant Professor, Gr-I	Pilani
Sandeep Joshi, Ph.D.	Assistant Professor, Gr-I	Pilani
Satyendra Kumar Mourya, Ph.D.	Assistant Professor, Gr-I	Pilani
Sharda Tripathi , Ph.D.	Assistant Professor, Gr-I	Pilani
Syed Mohammad Zafaruddin , Ph.D.	Assistant Professor, Gr-I	Pilani
Vinay Chamola , Ph.D.	Assistant Professor, Gr-I	Pilani
Yenuganti Sujan , Ph.D.	Assistant Professor, Gr-I	Pilani
Kranthi Kumar Palavalasa, M.Tech.	Assistant Professor,(OC)-Gr-I	OC-WILP
Pawan Sharma , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Rajesh Kumar Tiwary , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Rejesh N A , M.Tech.	Assistant Professor,(OC)-Gr-I	OC-WILP
Shree Prasad M, Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
A Rekha , M.E.	Assistant Professor(OC)-Gr-II	OC-WILP
Manoj Subhash Kakade , M.E.	Assistant Professor(OC)-Gr-II	OC-WILP
Swapna S Kulkarni , M.Tech.	Assistant Professor(OC)-Gr-II	OC-WILP
Gautam Gurupada. Bacher, Ph.D.	Assistant Professor, Gr-I	Goa
Pravin Sakharam Mane, Ph.D.	Assistant Professor, Gr-I	Goa
Sarang Chandrashekhar Dhongdi, Ph.D.	Assistant Professor, Gr-I	Goa
Narayan Suresh Manjarekar, Ph.D.	Assistant Professor, Gr-I	Goa
Sudeep Baudha, Ph.D.	Assistant Professor, Gr-I	Goa
Ashish Chittora, Ph.D.	Assistant Professor, Gr-I	Goa
Hrishikesh Shashikant Sonalikar, Ph.D.	Assistant Professor, Gr-I	Goa
Naveen Gupta, Ph.D.	Assistant Professor, Gr-I	Goa
Rakesh R. Warier, Ph.D.	Assistant Professor, Gr-I	Goa
Ravi Kadlimatti, Ph.D.	Assistant Professor, Gr-I	Goa
Kizheppatt Vipin, Ph.D.	Assistant Professor, Gr-I	Goa
Soumyabrata Barik, Ph.D.	Assistant Professor, Gr-I	Goa
Apurba Chakraborty, Ph.D.	Assistant Professor, Gr-I	Goa
Manish Bhatt, Ph.D.	Assistant Professor, Gr-I	Goa
Sudarshan Swain, Ph.D	Assistant Professor, Gr-I	Goa
Syed Ershad Ahmed, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Chetan Kumar Vudadha, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sumit Kumar Chatterjee, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Soumya J, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Mithun Mondal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Saroj Mondal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sudha Radhika, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Harish Vijay Dixit, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Rajesh Kumar Tripathy, Ph.D.	Assistant Professor, Gr-I	Hyderabad
R N Ponnalagu, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sayan Kanungo, Ph.D.	Assistant Professor, Gr-I	Hyderabad

Name	Designation	Campus
Ankur Bhattacharjee, Ph.D	Assistant Professor, Gr-I	Hyderabad
Karumbaiah C N, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Parikshit Parshuram Sahatiya, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Prashant K Wali, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sourav Nandi, Ph.D	Assistant Professor, Gr-I	Hyderabad
Ankush Chandrakant Jahagirdar , M.Tech.	Assistant Professor, Gr-II	Pilani
Devesh Samaiya , M.Tech.	Assistant Professor, Gr-II	Pilani
Harshavardhan Settibhaktini , M.Tech.	Assistant Professor, Gr-II	Pilani
Karri Babu Ravi Teja , M.Tech.	Assistant Professor, Gr-II	Pilani
Shishir Maheshwari, M.Tech.	Assistant Professor, Gr-II	Pilani
Vivek Chandran K.P., M.Sc. (Engg.)	Assistant Professor, Gr-II	Goa
Chembiyan Thambidurai, M.S.	Assistant Professor, Gr-II	Goa
Pramila, Ph.D.	Assistant Professor, Gr-II	Goa
Noel Prashant Ratchagar, Ph.D.	Assistant Professor, Gr-II	Goa
Anurag Nishad, Ph.D.	Assistant Professor, Gr-II	Goa
Srimath Tirumala Pallerlamudi Srinivas, Ph.D	Assistant Professor, Gr-II	Hyderabad
Amit Kumar Panda, Ph.D	Assistant Professor, Gr-II	Hyderabad
Pratyush Chakraborty, Ph.D.	Assistant Professor, Gr-II	Hyderabad
Gopal Krishna Kamath M, Ph.D.	Assistant Professor, Gr-II	Hyderabad
Subhradeep Pal, Ph.D.	Assistant Professor, Gr-II	Hyderabad
Amit Ranjan Azad, Ph.D	Assistant Professor, Gr-II	Hyderabad
Ramakant, M.Tech.	Assistant Professor, Gr-II	Hyderabad
Sandeep Kumar, M.Tech.	Assistant Professor, Gr-II	Hyderabad
Balasubramanian M, M.E.	Assistant Professor, Gr-II	Hyderabad
Raj Singh , M.Tech.	Visiting Faculty	Pilani
Sanjay Vidhyadharan, M.Tech	Visiting Faculty	Hyderabad
ECONOMICS AND FINANCE		
Arya Kumar , Ph.D.	Professor	Pilani
Arun Kumar Giri , Ph.D.	Professor	Pilani
Navuluru Venkata Muralidhar Rao, Ph.D.	Professor	Pilani
Niranjan Swain, PG.DIP., Ph.D.	Professor	Hyderabad
Mridula Goel, Ph.D.	Professor	Goa
Geetilaxmi Mohapatra , Ph.D.	Associate Professor	Pilani
Debasis Patnaik, Ph.D.	Associate Professor	Goa
Aswini Kumar Mishra, Ph.D.	Associate Professor	Goa
V.V.S.N.V Prasad Chundru, Ph.D.	Associate Professor	Goa
Raghunathan Rajasekaran, Ph.D.	Associate Professor	Hyderabad
Arun Kumar Vaish, Ph.D.	Assistant Professor, Gr-I	Pilani
Balakrushna Padhi , Ph.D.	Assistant Professor, Gr-I	Pilani
Byomakesh Debata, Ph.D.	Assistant Professor, Gr-I	Pilani
Krishna Muniyoor , Ph.D.	Assistant Professor, Gr-I	Pilani

Name	Designation	Campus
Rahul Arora , Ph.D.	Assistant Professor, Gr-I	Pilani
Rajan Pandey , Ph.D.	Assistant Professor, Gr-I	Pilani
Rajorshi Sen Gupta, Ph.D.	Assistant Professor, Gr-I	Goa
Arfat Ahmad Sofi, Ph.D.	Assistant Professor, Gr-I	Goa
Ritika Jaiswal, Ph.D.	Assistant Professor, Gr-I	Goa
Richa Shukla, Ph.D.	Assistant Professor, Gr-I	Goa
Suman Gupta, Ph.D.	Assistant Professor, Gr-I	Goa
Javed Ahmad Bhat, Ph.D.	Assistant Professor, Gr-I	Goa
China Hussain Yaganti, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Swati Alok, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Durgesh Chandra Pathak, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sudatta Banerjee, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Archana Srivastava, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Thota Nagaraju, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Rishi Kumar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Dushyant Kumar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Mini Thomas P, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sunny Kumar Singh, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Bheemeshwar Reddy A, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Nivedita Sinha, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Shreya Biswas, Ph.D	Assistant Professor, Gr-I	Hyderabad
Ramappagari L. Manogna, PG Diploma	Visiting Faculty	Goa
HUMANITIES AND SOCIAL SCIENCES		
Devika , Ph.D.	Professor	Pilani
Gajendra Singh Chauhan , Ph.D.	Professor	Pilani
Pushp Lata , Ph.D.	Professor	Pilani
Sangeeta Sharma , Ph.D.	Professor	Pilani
Shazi Shah Jabeen, Ph.D.	Professor	Dubai
Harikrishnan Gopinadhan Nair , Ph.D.	Associate Professor	Pilani
Kumar Neeraj Sachdev , Ph.D.	Associate Professor	Pilani
Kumar Sankar Bhattacharya, Ph.D.	Associate Professor	Pilani
Rajneesh Choubisa , Ph.D.	Associate Professor	Pilani
Sailaja Nandigama , Ph.D.	Associate Professor	Pilani
Sanjiv Kumar Choudhary , Ph.D.	Associate Professor	Pilani
Sushila Shekhawat , Ph.D.	Associate Professor	Pilani
Virendra S Nirban , Ph.D.	Associate Professor	Pilani
Geetha Bakilapadavu., Ph.D.	Associate Professor	Goa
Basavadatta Mitra, Ph.D.	Associate Professor	Goa
Rudra Prasad Pradhan, Ph.D.	Associate Professor	Goa
Shalini Upadhyay, Ph.D.	Associate Professor	Goa
Reena Cheruvalath, Ph.D.	Associate Professor	Goa

Name	Designation	Campus
Alamelu Geetha Krishnamurthy., Ph.D.	Associate Professor	Goa
Rayson K. Alex, Ph.D	Associate Professor	Goa
Prasuna M G , Ph.D.	Associate Professor	Hyderabad
Shilpaa Anand, Ph.D.	Associate Professor	Hyderabad
Anil Rai, Ph.D.	Assistant Professor, Gr-I	Pilani
Anupam Yadav , Ph.D.	Assistant Professor, Gr-I	Pilani
Chintalapalli Vijayakumar, Ph.D.	Assistant Professor, Gr-I	Pilani
Madhurima Das , Ph.D.	Assistant Professor, Gr-I	Pilani
Muhammed Afzal P , Ph.D.	Assistant Professor, Gr-I	Pilani
Paul Mathew, Ph.D.	Assistant Professor, Gr-I	Pilani
Prateek , Ph.D.	Assistant Professor, Gr-I	Pilani
Sunita Raina , Ph.D.	Assistant Professor, Gr-I	Pilani
Tanu Shukla , Ph.D.	Assistant Professor, Gr-I	Pilani
Veena R, Ph.D.	Assistant Professor, Gr-I	Pilani
Mrutuyanjaya Sahu, Ph.D.	Assistant Professor	Dubai
Sartaj Rasool Rather, Ph.D.	Assistant Professor	Dubai
Nitin Simha Vihari Poluru, Ph.D.	Assistant Professor	Dubai
Vinnarasan Aruldoss, Ph.D.	Assistant Professor	Dubai
Devika Sharma, Ph.D.	Assistant Professor	Dubai
Shamshad Ahmad Khan, Ph.D.	Assistant Professor	Dubai
Sayantan Chakraborty, Ph.D.	Assistant Professor	Dubai
Faisal Nazir Zargar, Ph.D.	Assistant Professor	Dubai
Nilak Datta, Ph.D.	Assistant Professor, Gr-I	Goa
Amitendu Bhattacharya, Ph.D.	Assistant Professor, Gr-I	Goa
Rajiv Kumar Chaturvedi, Ph.D.	Assistant Professor, Gr-I	Goa
Bidisha Banerjee, Ph.D.	Assistant Professor, Gr-I	Goa
Sayantani Sarkar, Ph.D.	Assistant Professor, Gr-I	Goa
Mohan Kumar Bera, Ph.D.	Assistant Professor, Gr-I	Goa
Solano Jose Savio Da Silva, Ph.D.	Assistant Professor, Gr-I	Goa
Hareesh A.G., Ph.D.	Assistant Professor, Gr-I	Goa
Aruna Lolla, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Maya Vinai, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Santosh Kumar Mahapatra, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Biswanath Dash, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Suchismita Satpathy, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Lavanya Suresh, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Pranesh Bhargava, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Jayesh A K, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Anhiti Patnaik, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Aswathy Raveendran, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Spandan Bhattacharya, Ph.D.	Assistant Professor, Gr-I	Hyderabad

Name	Designation	Campus
Parizad Dungore, Ph.D.	Visiting Assistant Professor	Dubai
Lakshmi Subramanian, Ph.D.	Visiting Professor	Goa
Nilanjana Goswami, M.Phil.	Visiting Faculty	Goa
GENERAL SCIENCE		
Priti Bajpai, Ph.D.	Professor	Dubai
Krishna Kumar Singh, Ph.D.	Professor	Dubai
Kumar Karuppusamy, Ph.D.	Professor	Dubai
Ramadoss Roopkumar, Ph.D.	Professor	Dubai
Geetha Kannan, Ph.D.	Associate Professor	Dubai
Maneesha, Ph.D.	Associate Professor	Dubai
Vijaya Ilango, Ph.D.	Associate Professor	Dubai
Somasundaram Arumugam, Ph.D.	Associate Professor	Dubai
Suhel Ahmad Khan, Ph.D.	Associate Professor	Dubai
Kavita Sunil Jerath, Ph.D.	Associate Professor	Dubai
Rusal Raj Francis, Ph.D.	Assistant Professor	Dubai
Baskaran Sriramulu, Ph.D.	Assistant Professor	Dubai
Amaranath Govindolla, Ph.D.	Assistant Professor	Dubai
MANAGEMENT		
Anil Kumar Bhat , FELLOW(IIM)	Professor	Pilani
Jyoti , Ph.D.	Associate Professor	Pilani
Leela Rani , Ph.D.	Associate Professor	Pilani
Neetu Yadav , Ph.D.	Associate Professor	Pilani
Praveen Goyal , Ph.D.	Associate Professor	Pilani
Satyendra Kr Sharma , Ph.D.	Associate Professor	Pilani
Udayan Chanda , Ph.D.	Associate Professor	Pilani
Ambatipudi Vamsidhar , PG.DIP.	Associate Professor-OC	OC-WILP
Annapoorna Gopal , Ph.D.	Associate Professor-OC	OC-WILP
Krishnamurthy Bindumadhavan , M.B.A.	Associate Professor-OC	OC-WILP
Ramesh Venkatraman , M.B.A.	Associate Professor-OC	OC-WILP
Sandeep Kayastha , M.Tech.	Associate Professor-OC	OC-WILP
Shekhar Rajagopalan , Ph.D.	Associate Professor-OC	OC-WILP
Sidharth Mishra , PG.DIP.	Associate Professor-OC	OC-WILP
Achint Nigam, FELLOW(IIM)	Assistant Professor, Gr-I	Pilani
Deepak Kumar Saxena, Ph.D.	Assistant Professor, Gr-I	Pilani
Jayashree Mahesh , Ph.D.	Assistant Professor, Gr-I	Pilani
Mohammad Faraz Naim , Ph.D.	Assistant Professor, Gr-I	Pilani
Nirankush Dutta , Ph.D.	Assistant Professor, Gr-I	Pilani
Rajesh Matai , Ph.D.	Assistant Professor, Gr-I	Pilani
Revendranath Tirumalsety , Ph.D.	Assistant Professor, Gr-I	Pilani
Saurabh Chadha , Ph.D.	Assistant Professor, Gr-I	Pilani
Shaili Singh , Ph.D.	Assistant Professor, Gr-I	Pilani

Name	Designation	Campus
Anjani Srikanth Koka , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Gaurav Nagpal , M.B.A.	Assistant Professor,(OC)-Gr-I	OC-WILP
MATHEMATICS		
Balram Dubey , Ph.D.	Professor	Pilani
Chandra Shekhar , Ph.D.	Professor	Pilani
Tarkeshwar Singh, Ph.D.	Professor	Goa
Bivudutta Mishra, Ph.D.	Professor	Hyderabad
Pradyumn Kumar Sahoo , Ph.D.	Professor	Hyderabad
Ashish Tiwari , Ph.D.	Associate Professor	Pilani
B K Sharma , Ph.D.	Associate Professor	Pilani
Devendra Kumar , Ph.D.	Associate Professor	Pilani
Krishnendra Shekhawat , Ph.D.	Associate Professor	Pilani
P K H Keskar , Ph.D.	Associate Professor	Pilani
Rajesh Kumar , Ph.D.	Associate Professor	Pilani
Rakhee , Ph.D.	Associate Professor	Pilani
Shivi Agarwal , Ph.D.	Associate Professor	Pilani
Trilok Mathur , Ph.D.	Associate Professor	Pilani
Prasanna Kumar Nekkare., Ph.D.	Associate Professor	Goa
Palla Danumjaya, Ph.D.	Associate Professor	Goa
Vijay Madhukar Patankar, Ph.D.	Associate Professor	Goa
Anil Kumar, Ph.D.	Associate Professor	Goa
Amit Setia, Ph.D.	Associate Professor	Goa
Jajati Keshari Sahoo, Ph.D.	Associate Professor	Goa
Dipak Kumar Satpathi, Ph.D.	Associate Professor	Hyderabad
A Michael Alphonse, Ph.D.	Associate Professor	Hyderabad
Manish Kumar, Ph.D.	Associate Professor	Hyderabad
Jaganmohan Jonnalagadda, Ph.D.	Associate Professor	Hyderabad
Sumit Kumar Vishwakarma, Ph.D.	Associate Professor	Hyderabad
Naraparaju Kishore Kumar, Ph.D.	Associate Professor	Hyderabad
Anirudh Singh Rana , Ph.D.	Assistant Professor, Gr-I	Pilani
Divyum Sharma , Ph.D.	Assistant Professor, Gr-I	Pilani
Gaurav Dwivedi , Ph.D.	Assistant Professor, Gr-I	Pilani
Jitender Kumar , Ph.D.	Assistant Professor, Gr-I	Pilani
Pamula Santhosh Kumar , Ph.D.	Assistant Professor, Gr-I	Pilani
Sangita Yadav , Ph.D.	Assistant Professor, Gr-I	Pilani
Sourav Kumar Sasmal, Ph.D.	Assistant Professor, Gr-I	Pilani
Sumanta Pasari , Ph.D.	Assistant Professor, Gr-I	Pilani
Manoj Kumar Pandey, Ph.D.	Assistant Professor, Gr-I	Goa
Mayank Goel, Ph.D.	Assistant Professor, Gr-I	Goa
Prabal Paul, Ph.D.	Assistant Professor, Gr-I	Goa
Himadri Mukherjee, Ph.D.	Assistant Professor, Gr-I	Goa

Name	Designation	Campus
Pradeep Boggarapu, Ph.D.	Assistant Professor, Gr-I	Goa
Shilpa Suresh Gondhali, Ph.D.	Assistant Professor, Gr-I	Goa
Anushaya Chittaranjan Mohapatra, Ph.D.	Assistant Professor, Gr-I	Goa
Mizanur Rahaman, Ph.D.	Assistant Professor, Gr-I	Goa
Anupama Sharma, Ph.D.	Assistant Professor, Gr-I	Goa
Saranya G. Nair, Ph.D.	Assistant Professor, Gr-I	Goa
Minhajul, Ph.D.	Assistant Professor, Gr-I	Goa
Monojit Bhattacharjee, Ph.D.	Assistant Professor, Gr-I	Goa
Yasmeen Shameer Akhtar, Ph.D.	Assistant Professor, Gr-I	Goa
Kota Venkata Ratnam, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Praveen Kumar P T V, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sai Lakshmi Radhika Tantravahi, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sharan Gopal, Ph.D.	Assistant Professor, Gr-I	Hyderabad
N Anil, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Jhuma Sen Gupta, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Santanu Koley, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Deepika, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Debopam Chakraborty, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Gujji Murali Mohan Reddy, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Nirman Ganguly, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Pratyusha Chattopadhyay, Ph.D	Assistant Professor, Gr-I	Hyderabad
Sabyasachi Dey, Ph.D	Assistant Professor, Gr-I	Hyderabad
K Bhargav Kumar, Ph.D	Assistant Professor, Gr-I	Hyderabad
Nijjwal Karak, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Rohit Gupta, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Farida Parvez Barbhuiya, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sajith P, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Nabin Kumar Meher, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Sayan Ghosh, Ph.D.	Assistant Professor, Gr-I	Hyderabad
MECHANICAL ENGINEERING		
Bijay Kumar Rout , Ph.D.	Professor	Pilani
Kuldip Singh Sangwan , Ph.D.	Professor	Pilani
Mani Sankar Dasgupta , Ph.D.	Professor	Pilani
Srikanta Routroy , Ph.D.	Professor	Pilani
Srinivasan Periaswamy , Ph.D.	Professor	Pilani
Chennu Ranganayakulu , Ph.D.	Visiting Professor	Pilani
Ramanujam Karthikeyan, Ph.D.	Professor	Dubai
Dhananjay Madhukar Kulkarni, Ph.D.	Professor	Goa
Pravin Madanrao Singru, Ph.D.	Professor	Goa
Amit Kumar Gupta, Ph.D.	Professor	Hyderabad
Srinivasa Prakash Regalla, Ph.D.	Professor	Hyderabad

Name	Designation	Campus
N Suresh Kumar Reddy, Ph.D.	Professor	Hyderabad
Sandip Shridharrao Deshmukh, Ph.D.	Professor	Hyderabad
Y Venkat Daseswara Rao, Ph.D.	Professor	Hyderabad
Abhijeet Keshaorao Digalwar , Ph.D.	Associate Professor	Pilani
Arun Kumar Jalan , Ph.D.	Associate Professor	Pilani
Jitendra Singh Rathore , Ph.D.	Associate Professor	Pilani
Manoj Kumar Soni , Ph.D.	Associate Professor	Pilani
Rajesh Prasad Mishra , Ph.D.	Associate Professor	Pilani
Sharad Shrivastava , Ph.D.	Associate Professor	Pilani
Arun Maity , Ph.D.	Associate Professor	OC-WILP
Benu Madhab Gedam , Ph.D.	Associate Professor-OC	OC-WILP
Paramesw Chidamparam , Ph.D.	Associate Professor-OC	OC-WILP
Shashank Mohan Tiwari , M.Tech.	Associate Professor-OC	OC-WILP
Venkataraman P.B , M.S.	Associate Professor-OC	OC-WILP
Shibu Clement, Ph.D.	Associate Professor	Goa
Waigaonkar Sachin Damodharrao, Ph.D.	Associate Professor	Goa
Ranjit Shankarrao Patil, Ph.D.	Associate Professor	Goa
Karthikeyan Ganesarethinam, Ph.D.	Associate Professor	Goa
Morapakala Srinivas, Ph.D.	Associate Professor	Hyderabad
Jeevan Jaidi, Ph.D.	Associate Professor	Hyderabad
Amrita Priyadarshini, Ph.D.	Associate Professor	Hyderabad
Sabareesh Geetha Rajasekharan, Ph.D.	Associate Professor	Hyderabad
R Parameshwaran, Ph.D.	Associate Professor	Hyderabad
Sujith R, Ph.D.	Associate Professor	Hyderabad
Phaneendra Kiran C, Ph.D.	Associate Professor	Hyderabad
A R Harikrishnan , Ph.D.	Assistant Professor, Gr-I	Pilani
Aakash Chand Rai , Ph.D.	Assistant Professor, Gr-I	Pilani
Amit Rajnarayan Singh, Ph.D.	Assistant Professor, Gr-I	Pilani
Amol M Marathe , Ph.D.	Assistant Professor, Gr-I	Pilani
Aneesh A M , Ph.D.	Assistant Professor, Gr-I	Pilani
Divyansh Patel , Ph.D.	Assistant Professor, Gr-I	Pilani
Faizan Mohammad Rashid , Ph.D.	Assistant Professor, Gr-I	Pilani
Gaurav Watts, Ph.D.	Assistant Professor, Gr-I	Pilani
Girish Kant Garg , Ph.D.	Assistant Professor, Gr-I	Pilani
Md Qaisar Raza , Ph.D.	Assistant Professor, Gr-I	Pilani
Murali P , Ph.D.	Assistant Professor, Gr-I	Pilani
Prateek Kala , Ph.D.	Assistant Professor, Gr-I	Pilani
Radha Raman Mishra, Ph.D.	Assistant Professor, Gr-I	Pilani
Sachin Ulhasrao Belgamwar , Ph.D.	Assistant Professor, Gr-I	Pilani
Saket Verma , Ph.D.	Assistant Professor, Gr-I	Pilani
Shyam Sunder , Ph.D.	Assistant Professor, Gr-I	Pilani

Name	Designation	Campus
Suvanjan Bhattacharyya , Ph.D.	Assistant Professor, Gr-I	Pilani
Tribeni Roy , Ph.D.	Assistant Professor, Gr-I	Pilani
Tufan Chandra Bera , Ph.D.	Assistant Professor, Gr-I	Pilani
Venkatesh Kadbur Prabhakar Rao , Ph.D.	Assistant Professor, Gr-I	Pilani
Dinesh W Wagh , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Naga V K Jasti , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Nithin Tom Mathew , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Pavan Kumar Potdar , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Raghuraman S , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Ravi Shrikrishna Reosekar , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Samata Satish Mujumdar , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Srinivas Kota , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Sudeep Kumar Pradhan , Ph.D.	Assistant Professor,(OC)-Gr-I	OC-WILP
Glynn John , Ph.D.	Assistant Professor(OC)-Gr-II	OC-WILP
Vincent Shantha Kumar, Ph.D.	Assistant Professor	Dubai
Priyank Upadhyaya, Ph.D.	Assistant Professor	Dubai
Shashank Khurana, Ph.D.	Assistant Professor	Dubai
Naveen Kumar Shrivastava, Ph.D.	Assistant Professor	Dubai
Snehaunshu Chowdhury, Ph.D.	Assistant Professor	Dubai
Gulshan Kumar, Ph.D.	Assistant Professor	Dubai
Vikas Vinayak Chaudhari, Ph.D.	Assistant Professor, Gr-I	Goa
Varinder Singh, Ph.D.	Assistant Professor, Gr-I	Goa
Kiran Dinkar Mali, Ph.D.	Assistant Professor, Gr-I	Goa
Sandeep Jose, Ph.D.	Assistant Professor, Gr-I	Goa
Pritanshu Ranjan, Ph.D.	Assistant Professor, Gr-I	Goa
Vadiraj Anant Hemadri, Ph.D.	Assistant Professor, Gr-I	Goa
Siddhartha Tripathi, Ph.D.	Assistant Professor, Gr-I	Goa
Devendra Gokul Patil, Ph.D.	Assistant Professor, Gr-I	Goa
Biswajit Das, Ph.D.	Assistant Professor, Gr-I	Goa
Nilesh Dadasaheb Pawar, Ph.D.	Assistant Professor, Gr-I	Goa
Vaibhav Joshi, Ph.D.	Assistant Professor, Gr-I	Goa
Ganesh Madhav Bapat, Ph.D.	Assistant Professor, Gr-I	Goa
Ashwin K.P., Ph.D.	Assistant Professor, Gr-I	Goa
Nandanavanam Jalaiah, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Kurra Suresh, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Nitin Rameshrao Kotkunde, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Satish Kumar Dubey, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Arshad Javed, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Supradeepan K, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Ram Chandra Murthy Kalluri, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Santanu Prasad Datta, Ph.D.	Assistant Professor, Gr-I	Hyderabad

Name	Designation	Campus
Pavan Kumar Penumakala, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Ravi Shanker Vidyarthy, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Pardha Saradhi Gurugubelli Venkata, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Piyush Chandra Verma, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Brajesh Kumar Panigrahi, Ph.D	Assistant Professor, Gr-I	Hyderabad
Vuppuluri Amol, Ph.D	Assistant Professor, Gr-I	Hyderabad
Kundan Kumar Singh, Ph. D	Assistant Professor, Gr-I	Hyderabad
Prabakaran Saravanan, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Mrinal Ketan Jagirdar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Abhishek Sarkar, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Abhilash Kumar Tilak, M.Tech.	Assistant Professor, Gr-II	Goa
Ravindra Singh Saluja, M.Tech.	Assistant Professor, Gr-II	Goa
Amal S. Siju, M.Tech.	Assistant Professor, Gr-II	Goa
Iniyan Thiruselvam N., Ph.D.	Visiting Assistant Professor	Goa
Khalid Anwar, M.E.	Assistant Professor, Gr-II	Hyderabad
PHARMACY		
Ranendranarayan Saha, Ph.D.	Acting Vice Chancellor	Pilani
Hemant Jadhav, Ph.D.	Professor	Pilani
R Mahesh, Ph.D.	Professor	Pilani
D Sriram , Ph.D.	Professor	Hyderabad
P Yogeeswari , Ph.D.	Professor	Hyderabad
Punna Rao Ravi, Ph.D.	Professor	Hyderabad
A Sajeli Begum, Ph.D.	Professor	Hyderabad
Anil Jindal , Ph.D.	Associate Professor	Pilani
Aniruddha Roy , Ph.D.	Associate Professor	Pilani
Anupama Mittal , Ph.D.	Associate Professor	Pilani
Atish Tulshiram Paul , Ph.D.	Associate Professor	Pilani
Deepak Chitkara , Ph.D.	Associate Professor	Pilani
G Anil Bhanudas , Ph.D.	Associate Professor	Pilani
Rajeev Taliyan , Ph.D.	Associate Professor	Pilani
S Murugesan , Ph.D.	Associate Professor	Pilani
Venkata Vamsi Krishna Venuganti, Ph.D.	Associate Professor	Hyderabad
Swati Biswas, Ph.D.	Associate Professor	Hyderabad
Onkar P Kulkarni, Ph.D.	Associate Professor	Hyderabad
Arti Dhar, Ph.D.	Associate Professor	Hyderabad
Balaram Ghosh, Ph.D.	Associate Professor	Hyderabad
Dixit Vaibhav Anil , Ph.D.	Assistant Professor, Gr-I	Pilani
Gautam Singhvi , Ph.D.	Assistant Professor, Gr-I	Pilani
M M Pandey , Ph.D.	Assistant Professor, Gr-I	Pilani
Richa Shrivastava , Ph.D.	Assistant Professor, Gr-I	Pilani
Sandeep Sundriyal , Ph.D.	Assistant Professor, Gr-I	Pilani

Name	Designation	Campus
Bharathi R , M.E.	Assistant Professor,(OC)-Gr-I	OC-WILP
Nirmal Jayabalan,Ph.D	Assistant Professor, Gr-I	Hyderabad
Akash Chaurasiya,Ph.D	Assistant Professor, Gr-I	Hyderabad
PHYSICS		
Anshuman Dalvi , Ph.D.	Professor	Pilani
Debashis Bandyopadhyay , Ph.D.	Professor	Pilani
Debi Datt Pant , Ph.D.	Professor	Pilani
Raj Kumar Gupta , Ph.D.	Professor	Pilani
Rashmi Ranjan Mishra, Ph.D.	Professor	Pilani
V Manjuladevi , Ph.D.	Professor	Pilani
Arun Venkatesh Kulkarni, Ph.D.	Professor	Goa
P. Nandakumar, Ph.D.	Professor	Goa
Prasanta Kumar Das, Ph.D.	Professor	Goa
P K Thiruvikraman, Ph.D.	Professor	Hyderabad
Souri Banerjee, Ph.D.	Professor	Hyderabad
Aranya Bhuti Bhattacharjee, Ph.D.	Professor	Hyderabad
Amol Ramdas Holkundkar , Ph.D.	Associate Professor	Pilani
Jayendra Nath Bandyopadhyay , Ph.D.	Associate Professor	Pilani
Kaushar Vaidya , Ph.D.	Associate Professor	Pilani
Madhukar Mishra , Ph.D.	Associate Professor	Pilani
Navin Singh , Ph.D.	Associate Professor	Pilani
Niladri Sarkar , Ph.D.	Associate Professor	Pilani
Rakesh Choubisa , Ph.D.	Associate Professor	Pilani
S Gangopadhyay , Ph.D.	Associate Professor	Pilani
Tapomoy Guha Sarkar , Ph.D.	Associate Professor	Pilani
Radhika Vathsan, Ph.D.	Associate Professor	Goa
Gaurav Dar, Ph.D.	Associate Professor	Goa
Raghunath Anand Ratabole, Ph.D.	Associate Professor	Goa
Teny Theresa John, Ph.D.	Associate Professor	Goa
Chandradew Sharma, Ph.D.	Associate Professor	Goa
Ram Shanker Patel, Ph.D.	Associate Professor	Goa
Senthamarai Kannan Ethirajulu, Ph.D.	Associate Professor	Goa
Toby Joseph, Ph.D.	Associate Professor	Goa
Tarun Kumar Jha, Ph.D.	Associate Professor	Goa
Kannan Ramaswamy, Ph.D.	Associate Professor	Hyderabad
Aravinda Narayanan Raghavan, Ph.D.	Associate Professor	Hyderabad
B Harihara Venkataraman, Ph.D.	Associate Professor	Hyderabad
Meenakshi V, Ph.D.	Associate Professor	Hyderabad
Sarmishtha Banik, Ph.D.	Associate Professor	Hyderabad
Subhash Narayan Karbelkar, Ph.D.	Associate Professor	Hyderabad
V Satya Narayana Murthy, Ph.D.	Associate Professor	Hyderabad

Name	Designation	Campus
Rahul Nigam, Ph.D.	Associate Professor	Hyderabad
Biswanath Layek , Ph.D.	Assistant Professor, Gr-I	Pilani
Sandipan Dutta , Ph.D.	Assistant Professor, Gr-I	Pilani
Srijata Dey , Ph.D.	Assistant Professor, Gr-I	Pilani
Vaidya Rishikesh D , Ph.D.	Assistant Professor, Gr-I	Pilani
Deepak Narayana Murthy Pachattu., Ph.D.	Assistant Professor, Gr-I	Goa
Sunilkumar Vattezhath., Ph.D.	Assistant Professor, Gr-I	Goa
Kinjal Banerjee, Ph.D.	Assistant Professor, Gr-I	Goa
Swastibrata Bhattacharyya, Ph.D.	Assistant Professor, Gr-I	Goa
Rudranil Basu, Ph.D.	Assistant Professor, Gr-I	Goa
Indrani Chakraborty, Ph.D.	Assistant Professor, Gr-I	Goa
Prasand Anant Naik, Ph.D.	Visiting Professor	Goa
Sashideep Gutti, Ph.D.	Assistant Professor, Gr-I	Hyderabad
K V S Shiv Chaitanya, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Asrarul Haque, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Prasant Kumar Samantray, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Swastik Bhattacharya, Ph.D.	Assistant Professor, Gr-I	Hyderabad
Davuluri Subrahmanya Bhima Sankar, Ph.D	Assistant Professor, Gr-I	Hyderabad

OTHER ACADEMIC STAFF		
Ranjan Sinha Thakur, Ph.D.	Librarian	Pilani
Sivakumar Raja Rathinam, Ph.D.	Librarian	Dubai
Ishappa Bandi, Ph.D.	Dy. Librarian	Pilani
Deepak Mehta, M.PHIL.	Dy. Librarian	Pilani
Anuradha Voolapalli, Ph.D.	Dy. Librarian, Gr-II	Goa
M.S. Udaya Kumar M.LIB.	Dy. Librarian	Hyderabad
Pintu Modak, Ph.D.	Sr. Physical Education Officer	Pilani
Chandu Gurappa Lamani, Ph.D	Physical Education Officer	Goa
Jayachandran Krishnasamy, M.PHIL.	Assistant Librarian	Dubai
Bhavesh Verma, M.PHIL.	Physical Education Instructor	Pilani
Gnana Prasad Reddy M	Physical Education Instructor	Hyderabad

SCIENTISTS / PROFESSIONALS PARTICIPATING IN SPECIFIC COLLABORATIVE PROGRAMMES:

The list of scientistis / professionals from industries / collaborating organizations who are currently involved and actively participating in running specific collaborative programmes is given below:

BITS - Oracle India, Bangalore, Collaboration: M.Tech. Software Engineering

Organization Professionals:

Mr. Vinodkumar Chithambaram, Mr. Mukul Goswami

Guest Faculty

Prof Ajit Kumar Sarangi	Computer Science
Prof Nagarajan R	Computer Science

BITS – SAP Labs, Bangalore, Collaboration: M.Tech. Software Engineering

Organisation Professionals:

Markus Bell, Pooja Suresh, Zoya Kapoor

Guest Faculty

Mr. Ajay Misra, Ms. Anitha N, Mr. Badari Jallipalli, Mr. Bhaskar Zaminder, Mr. Bhupinder, Mr. K Bhaskar, Mr. Love Arora, Ms. Manjula Sanjay Koti, Ms. Meena, Ms. Mohana Murali, Ms. Neha Garg, Mr. Parthasarathy P D, Mr. R Chandrashekhar, Mr. Rajat Raghuvanshi, Ms. Sheetal, Mr. Srevats, Mr. Vadivelan, Mr. Vijayrajan

BITS - UTAS, Bangalore, Collaboration: M.Tech. Embedded Systems

Organization Professionals:

Basavaraj Gadigeppagoudar, Della Thomas

Guest Faculty:

Prof. Shirdinath Tekur, Mr. Ajay Sood

BITS - CISCO, Bangalore, Collaboration: M.Tech. Software Systems

Organization Professionals:

Mr. Vipin Thomas, Ms. Lalitha Balasubramanian

Guest Faculty

Prof.S Vagdevi	Computer Science
Prof.Channabasappa Heralgi	Computer Science
Mr.Siva Sankar Anumula	Computer Science
Mr.Kallol Pal	Computer Science
Mr.Jagadeesh B Kanade	Computer Science

BITS - CISCO, Bangalore Collaboration: M.Tech. Embedded Systems

Organization Professionals:

Mr. Srinivasa Krishnamachar, Sr. Director, Supply Chain Operations, Cisco

Guest Faculty

Mr.Arunkumar Jayaprakasam	Electronics
Mr.Krishnendu Mondal	Electronics

BITS - CISCO, Bangalore, Chennai, Pune, Gurgaon, Collaboration: M.Tech. Software Systems

Organization Professionals:

Mr. Christian Barrios, Director Human Resources, Cisco India and SAARC

Guest Faculty:

Mr. A M Prasad, Mr. Ashish Anand Kulkarni, Mr. Siddesh G M, Mr. KV Vamsi Krishna, Mr. SIDDESH G M

BITS-Avaya, Pune, Collaboration: M.Tech. Software Engineering

Organisation Professionals:

Mr. Anirban Mookerjee Mr. Saurabh Amikar

Guest Faculty:

Prof. Arun	Computer Science & Information Systems
Dr. Sunil Dhore	Computer Science & Information Systems
Prof. Sanjeev Pithambrer	Computer Science & Information Systems
Prof. Sourish Banerjee	Computer Science & Information Systems

BITS-Avaya, Pune, Collaboration: M.Tech. Data Science Engineering

Organisation Professionals:

Mr. Anirban Mookerjee Mr. Saurabh Amikar

Guest Faculty:

Mr. Kulkarni Milind Vasantrao, Mr. Deshmukh Sudarshan S., Mr. Manish Kumar Singh

BITS-HCL Technologies, Noida, Collaboration: B.Sc. Desogm & Computing

Guest Faculty:

Mr. M. Sriram, Mr. Gautham Sekar, Mr. M. Sugadev, Ms. C.L Shilaja, Mr. Hannah Sanala Mohan, Mr. S.UdhayaBaskaran, Mr. Chandrashekhar Prabhakaran, Ms. Nilanajana Goswami, Mr. S.Udhayabaskaran, Mr. Prashant Shukla

BITS – BOSCH, Across india

Organisation Professional:

Mr. Purayil Jinesh Kadavath

Guest Faculty:

Mr. Sankarakrishnan	Management
Mrs. Vaishali Pagaria	Management
Mr. Rahul Pratap Singh Kaurav	Management

BITS - Bharat Forge Limited, Pune, Collaboration: B.Tech. Manufacturing Technology

Organisation Professionals:

Mr.Amit Kalyani, Mr.Raju Kalyani, Dr. Raj Kumar Singh Dr. SV Bhave, Mr. G K Agarawal, Dr. Ajay Ingle

Guest Facutly:

Mr. Harish Deshpande	Mechanical
Mr. Anand Mahurkar	Mechanical
Mr. K Deshmukh,	Mechanical
Mr. Srikant Madiwale	Mechanical
Mr. Mukesh Ghogre	Instrumentation
Mr. N K Josh	Mechanical
Mr. Vikas Jadhav	Mathematics
Mr.Amjad Shaik	Mathematics
Mr. Mahadev Chowgule	Electrical & Electronics
Mr. Sandeep Wankhade	Mechanical

CLUSTER PROGRAMME, Pune: M.Tech. Embedded Systems

Guest Faculty:

Prof. S. S. Kendre	Electronics
Prof. Pawan Gupta	Computer Science & Information Systems
Prof. Pushkar Barve	Embedded System
Prof. Narendra Lakal	Mechanical
Prof. Anju Kulkarni	Electronics and Telecommunication
Prof. Pandit Jagtap	Electronics

CLUSTER PROGRAMME, Pune: M.Tech. Design Engineering

Organisation Professionals:

Dr. Raj Kumar Singh Mr. Jitendra Divgi

Guest Faculty:

Mr. N K Joshi	Mechanical
Mr. Ayaz Khan	Mechanical
Mr. Harish Deshpande	Mechanical
Dr. Umesh Chavan;	Mechanical
Dr. Suhas Deshmuk	Mechanical
Mr. Anand Mahulkar,	Mechanical
Mr. KW Deshmukh	Mechanical
Ms Sandhya Pande	Mechanical
Mr. Vikas Jadhav	Mathematics
Dr. Ganesh Kakandekar	Mechanical

BITS-JOHN DEEERE, Pune, Collaboration: M.Tech. Design Engineering; B.Tech. Engineering Technology

Organisation Professionals:

Mr. Lalit Ganwir

Guest Faculty

Mr. Prakash Pednekar	Mechanical
Mr. Prasad Deshpande	Mechanical
Mr. Amjad Sheikh	Mathematics
Mr. NK Joshi	Mechanical
Mr. Milind Ramgir	Mechanical
Dr. Suhas Deshmukh.	Mechanical

BITS - TACO India Ltd., Pune, Collaboration: B.Tech. Manufacturing Technology

Organisation Professionals:

Mr. Ajay Tondon, Mr. Siba Satapathy, Mr. Kanchan Kumar Biswas

Guest Facutly:

Mr Sunil Divekar	Mechanical,
Mr. Anand Mahurakar	Mechanical,
Mr. Amol Shinde	Mechanical,
Mr. Prasad Deshpande	Mechanical,
Mr. Mahadev Chougule	Electrical and Electronics,
Mr. Sandeep Wankhede	Mechanical,
Mr. Harish Deshpande	Mechanical,
Ms. Puja Awachat	Language

BITS - Tata Motor, Pune: Collaboration: M.Tech. Automatic Engineering

Organisation Professionals:

Mr. Sushant Routray, Ms. Anupama Shukla, Mr. Nishant Jaiswal

Guest facuty:

Dr. Benu Madhav	Mechanical
Dr. Ganesh Soni,	Mechanical
Mr. Sarvesh Mahajan,	Mechanical
Mr. Amol Shinde	Mechanical

BITS - Tata Motors (ERC), Pune: Collaboration: M.Tech. Automatic Engineering

Organisation Professionals:

Mr. Angsuman Sharma , Ms. Archana Saraf

Guest Faculty:

Mr. Vijay Sonawane	Mechanical
Mr. Girish Muraleedharakurup	Mechanical
Mr. Shrikant Madiwale	Mechanical
Ms. Sandhya Pande	Mechanical
Mr. Millind Ramgir	Mechanical
Ms. Yogeshri Gaidhani	Mathematics

BITS - Tata Motor, Pune: Collaboration: B.Tech. Manufacturing Technology

Organisation Professionals:

Mr. Gajendra Chandel , Mr. Mukund Vyas, Ms. C. Sneha

Guest faculty:

Mr. Satya Balaji	Mechanical
Mr. Amol Shinde	Mechanical
Mr. Sunil Divekar	Mechanical
Mr. Mahadev Chougule	Electrical & Electronics

BITS - Tata Motors (ERC), Pune: Collaboration: B.Tech. Engineering Technology

Organisation Professionals:

Mr. Angsuman Sharma , Ms. Archana Saraf , Mr. Ashish Sharma

Guest Faculty:

Mr. Amol Shinde	Mechanical
Mr. Sudhir Sindagi	Mechanical
Mr. Millind Ramgir	Mechanical

BITS - Mahindra Vehicles Manufacturing India Ltd., Pune, Collaboration: B.Tech. Manufacturing Technology

Organisation Professionals:

Ms. Shubangi Jagtap, Mr.Mahesh Karindkar,Mr. Sunil Mane.

Guest faculty:

Mr. Sandip Wankhade	Mechanical
Mr. Rahul Kale	Languages
Mr. Wallace Jacob	Management

BITS – Samsung, Noida, Collaboration: M.Tech. Software Systems

Organisation Professionals:

Ms. Anumeha

Guest Faculty:

Mr. Piyush Kulshreshtha- Computer Science & Information Systems

Mr. Sheshadri Chatterjee- Computer Science & Information Systems

Mr. Dhiraj K. Prasad - Computer Science & Information Systems;

BITS - Tata Technologies, Pune, Collaboration: M.Tech. Automotive Engineering

Organisation Professionals:

Mr. Subhendu Ghosh, Mr. Aditya Roy Choudhary, Mr. C. Surendra Nath, Ms. Anumeha Jain, Mr. Indranil Bhattacharya.

Guest faculty:

Dr. Sanjay Pohekar Mechanical

BITS - Cummins India Ltd., Pune: Collaboration: B.Tech. Manufacturing Technology

Organisation Professionals:

Ms. Gayatri Phadke, Ms. Shabanam Pathan, Ms. Prerna Koppiker

BITS - Tata Motors Limited, Jamshedpur, Collaboration: B.Tech. Manufacturing Technology

Organisation Professionals:

Mr. Sampath Kumar Morri, Mr. Ravi Ranjan, Ms. Nilanjana Mohanty, Mr. Rajiv Ranjan.

Guest Faculty

Mr. Buntu Kumar	Mechanical
Mr. Ashutosh Tripathy	Mechanical
Mr. Subhashis Ghosh	Mechanical

Mr. Rakesh Kumar Sarangi (Electrical & Electronics)

BITS - Verizon Data Services Ltd, Chennai and Hyderabad, Collaboration: M.Tech. in Software Engineering

Organisation Professionals:

Mr. Jose Francis M, Ms. Anisha Joseph

Guest faculty:

Mr. Aravind Appan	Computer Science & Information Systems
Ms. Uma Ganesan	Computer Science & Information Systems
Mr. Mahavir	Computer Science & Information Systems
Mr. Muruganandam	Computer Science & Information Systems
Mr. Raja Chidambaram	Computer Science & Information Systems
Mr. M.J.Shankarraman	Computer Science & Information Systems
Mr. Vijaykumar Athithyan	Computer Science & Information Systems
Mr. Krishnamoorthy Rao	Computer Science & Information Systems
Mr. Balamurugan	Computer Science & Information Systems
Mr. Prabhu Sunderraman	Computer Science & Information Systems

BITS - Chennai Cluster Online Collaboration: M.Tech. in Design Engineering

Guest faculty:

Mr. Sankarakrishnan	Mechanical
Mr.Ven Holalkere	Mechanical

Delhi Cluster: M.Tech. Design Engineering & M.Tech. Embedded System

Guest Faculty

Mr. Amit Sharma	Mechanical
Dr. Ashish Aggarwal	Mechanical
Dr. Umang Soni	Mechanical
Dr. Girish Kumar	Mechanical
Mr. MD Zubair	Mechanical
Mr. Wasim Alram	Mechanical
Mr. GNS Harsha	Electrical & Electronics
Mr. Ravinder Kumar Chahar	Electrical & Electronics

BITS - Maruti Suzuki India Ltd, Gurgaon, Collaboration: B.Tech. Manufacturing Technology

Organization Professionals:

Mr. Deepak Kumar, Mr. L.K. Gupta, Mr. Devanshu Wadhawan, Mr. C D Sharma, Mr N. K. Das

Guest Faculty:

Dr. Umang Soni – Mechanical

Prof. Ashutosh Pandey – Mechanical

Mrs. Monika Garg – Mathematics

Prof. Imran Siraj – Computer Science & Information Systems

Mr Rahul Katna - Mechanical

BITS – BPCL, Mumbai, Collaboration: B.Tech. Process Engineering

Guest Faculty

Prof. Umesh Mahind	Electronics Engg
Prof. Ganesh Dhamal	Mathematics
Prof. Sonal Dhar	Mechanical Engg
Prof. Pramod Bide	Computer Science & Information Systems

BITS – Lupin Ltd., Mumbai, Collaboration: M.Tech. Pharmaceutical Operation and Management

Guest Faculty

Prof. Gokhale Jayanti	Computer Science & Information Systems
Mr. Viswanathan	Management

BITS - Wipro Infotech, Bangalore, Mumbai, Hyderabad, Mumbai, Gurgaon, Collaboration: M.Tech. Systems Engineering, and B.Tech. Information Systems.

Organisation Professionals:

Mr. Ajay Narayanan, Ms. Neha, Ms. Anchal Tripathi, Ms. Ashif Banu Abdul Razak, Ms. P. Monica Prisulla, Ms. Pinky Paresh Bhatt, Ms. Puhpanjali Patnaik.

BITS-Wipro Technologies, Bangalore, Chennai, Hyderabad, Kolkata, Pune, Mysore, Mumbai, Gurgaon, Kochi and Coimbatore.

Collaborations: M.Tech. Software Engineering, M Tech, Computing Systems & Infrastructure, M. Tech. in Software Systems, M.Tech. Microelectronics and B.Tech. Information Systems

Organisation Professionals:

Mr. P B Kotur, Mr. Thirunavukkarasu, Mr. Murali Punniyakodi, Mr. Satheesh Kumar, Mr. Santosh Sridhar, Mr. Nimesh Gala, Mr. Mukesh Verma, Ms. Rajani Satheesan.

Guest Faculty for Wipro Technologies and Wipro Infotech:

Mr. A Gautham, Mr. A M Prasad, Mr. A N K Prasannanjaneyulu, Mr. A Srivalli, Mr. Ahire Prashant Gopichand, Mr. Aman Kedia, Mr. Amarsinh Vidhate,

Mr. Ambati Venkata Krishna Prasad, Mr. Amit Srivastava, Mr. Amiya Kumar Dash, Mr. Angshumitra Ghosh, Mr. Anil Kumar.G, Mr. Animesh Giri, Mr. Anitha N, Mr. Anjan K, Mr. Aparna Ramesh, Mr. Kumar, Mr. Archana Krishnan, Mr. Aroul Cannessane, Mr. Arun Vadekkedhil, Mr. Atul Vaze, Mr. Avinash Thakur, Ms. B Radhika, Mr. B Sunil, Mr. Balasubrahmanya S, Mr. Bhalaji Natarajan, Ms. Bhawana Tyagi, Mr. C R Sarma, Mr. Ch Ramesh, Mr. Chandan R N, Mr. Chandrashekhar Pomu Chavan, Mr. Channabasappa, Mr. Chinmaya Nayak, Mr. Chinnaswamy C N, Mr. Chockalingam, Mr. CR Sarma, Mr. D Srikanth, Ms. D Sujatha, Mr. D Venkata Subramanian, Mr. Dattathreya, Mr. Debasis Bandyopadhyay, Mr. Deenadhayalan, Mr. Deshmukh Sudarshan S, Mr. Devarajan T Ramanutam, Mr. Dhamal Ganesh Ramchandra, Mr. Dheenadhayalan, Mr. Dhinakaran K, Mr. Dinesh Kumar V S, Mr. Dinesh M N, Mr. Dinesh Singh Rawat, Ms. Dolly Gupta, Mr. DS Rao, Mr. Dudam Shridhar Sudarshan, Mr. G Anil Kumar, Ms. G Krishna Kumari, Mr. G Madan, Mr. G Praveen, Mr. Ganesh B Ingle, Mr. Ganesh Babu, Mr. Gangaboraiah, Ms. Gayathri Soman, Mr. Gnanavel, Mr. Guruprasad Shenai, Mr. Gururaja H S, Mr. Hari Narayanan A G, Mr. Harish Kumar BT, Mr. Hemalatha S, Mr. Indrajit Banerjee, Mr. J A Gokhale, Mr. J Jawahar Rao, Mr. Janardhan Singh K, Ms. Jayalakshmi, Mr. Jayalakshmi Natarajan, Ms. Jayanthi M G, Ms. Jayashree M, Mr. Jibin Najeeb, Mr. K Audinarayana Reddy, Mr. K Brahma Naidu, Ms. K Jyothi Ratna, Mr. K Maruthi Prasad, Ms. K Vidya, Mr. K. Bhasker Rao, Ms. K.Madhuri, Ms. K.Vidya, Ms. Kalpana Ranade, Mr. Kempe Gowda M, Mr. Kendre Sangmeshwar Shankarrao, Mr. Khairnar Hitendra Shankarrao, Mr. Krishna Prasad, Mr. Kulkarni Milind Vasantrao, Mr. Kumar A, Mr. Kumbhar Amar Shivaji, Mr. KV Vamsi Krishna, Mr. Lohith J J, Mr. Lokesh S, Ms. M Keerthi, Mr. M. Vasudevarao, Mr. Madhankumar G S, Ms. Madhu Venkat, Ms. Madhuri K, Mr. Manikandan A G, Ms. Meghana Joshi, Mr. Mohammed Tajuddin, Mr. Mohana Priya S, Mr. Muralidhar, Mr. Muruganandham, Mr. N K Riyaz. Mr. N Pardhasaradhy, Mr. N Prasanna Balaji, Mr. N Srinivasan, Mr. N.Krishna Murthy, Mr. N.Srikanth Prasad, Mr. Nagaveni R, Mr. Nagesh B S, Ms. Nanda Ashwin, Ms. Naveen Samala, Mr. NL Bhikshu, Mr. P Maruthi Rao, Ms. P Nirmala, Ms. P Renuka, Mr. P Santosh Pavan, Mr. P Seshagiri, Mr. Parthasaradhi Nayani, Mr. Patankar Abhijit Janardan, Mr. Patil Sandeep Ramsing, Mr. Patki Ravi Prakasharao, Mr. Pawan Gupta, Mr. Piyush Kulshreshtha, Mr. Ponde Poonam Subhashchandra, Mr. Pradnya Amit Kashikar, Mr. Pranabananda Chakraborty, Mr. Prashant Babarao Kumbharkar, Mr. Praveen Kamath, Mr. Purushotham BV, Mr. PV Saradhy, Mr. R Nagaraja, Mr. R Rajan, Mr. R Rajasudha, Mr. R Usharani, Mr. R. Magesh, Ms. Rafidha Rehiman K A, Mr. Raghavendra T S, Mr. Raghavendran V, Mr. Rajachidambaram, Mr. Rajesh Saidasan, Mr. Rakesh Tarneja, Ms. Rama Satish K V, Mr. Ramakanth K P, Ms. Ramya Devi M, Mr. Ranganath, Ms. Ranjita Mookherjee, Mr. Rashmiranjan Mahakud, Mr. Rathi Nilesh Shashikant, Mr. Rijwan Khan, Mr. Riyaz N K, Mr. Riyazuddin, Mr. S Keshava Murthy, Mr. S Malathi, Mr. S Muruganandam, Mr. S Nandagopalan, Mr. S Praveen Kamath, Mr. S Ramcharan, Mr. S Ravi, Mr. S S Sivakumar, Mr. S Udhayakumar, Mr. S. Nandagopalan, Ms. S.Geetha, Mr. Sandeep Kumar Savanoor, Mr. Sanjeevkumar, Mr. Trimbak Pitambare, Mr. Santosh Kumar, Mr. Santoshkumar Vaman Chobe, Mr. Sarbeswara Hota, Mr. Sathish Shet. K, Mr. Satish Pathak, Mr. Satpute Babasaheb Sambhajirao, Mr. Saurabh Ghosh, Mr. Selvaraj K, Mr. Shaibal Kumar Sen, Mr. Shashidhara H R, Ms. Shashikala, Mr. Siddesh G K, Ms. Simi T A, Mr. Sivakumar, Ms. Sneha Kiran Thombre, Mr. Sourabh Mengale, Mr. Sourish Banerjee, Mr. SP Chokkalingam, Mr. Srikant Sahoo, Mr. Srikanth Prasad, Mr. Srikanth Reddy Makthal, Mr. Srinivas V Josyula, Mr. STVV Yadunandan, Ms. Suchita Vaidya, Mr. Sugadev, Mr. Suhas K P, Ms. Sujatha D, Ms. Suma V, Ms. Sunaina S. Potdar, Mr. Sunil Ramdaspant Dhore, Mr. Suresh Srinivasan, Ms. Surma Devi, Ms. Swati Tyagi, Mr. T Praveen Kumar, Mr. T Vijaya Kumar, Mr. Tamhankar Parag Anil, Mr. Thangakumar. J, Mr. TNGK Ranganath, Mr. Trilok Nath Pandey, Ms. Tuhina Samanta, Ms. Usharani, Mr. Utpal Mukhopadhyay, Mr. V G Ravish, Ms. V Praveena, Mr. V Sridhar, Mr. V Srinivasan, Ms. Vagdevi S, Ms. Veena Antony, Ms. Veena N, Mr. Venkatesh, Mr. Vijay Babu Varma, Mr. Vijaya Bharath K, Mr. Vijayakumar Athithan, Mr. Vijayarangam, Mr. Vinod Kumar K, Mr. Vishwanath Murthy, Mr. Vivek Kulkarni, Mr. Vivekananda M R, Mr. Vyavahare Sachin Machindra, Mr. Yogesh Bhatia, Mr. Yogesh Ravindra Somavanshi, Ms. Yogeshri Sudhir Gaidhani

BITS - JSW Steel Ltd., Vijayanagar, Collaboration: B.Tech. Process Engineering

Organization Professionals

Dr. V. K. Nowal, , Mr. Pankaj Lochan, Rajmohan Narasimhan, Dipansu Laskar , Mr. Achutha Raghava, Dr. Ramakrishna, Mr. Upendra Kumar

Guest Faculty

Mr. Shakeel Ahmed Maniyar, Prof. Jeevargi Phakirappa, Dr. Rameshwar Sah, Mr. Satish Kumar Dabbiru, Dr. Mallikarjunrao Panabaka, Ms. Uma Devi, Dr. Sarbendu Sanyal, Dr. Manjini , Sambandam, Dr. Jitendra Mohapatra, Mr. Sharanappa Kalshetty, Dr. Ravi Kishore, Mr. Mrunmaya Pasupalak ,Mr. Chaitanya Ayyagari , Dr. Ravi Kishore , Mr. Vijaya Sekhar , Mr. P K , Tripathi, Prof. Pavan Kumar , Mr. Siddalingagouda, Mr. Irshad Ali , Mr. Venkatesan J, Mr. Ratnakar Bonda, RAJAN CHOLAPALLIYALIL,Prof. Gururaj KK , Mr. Krishna Rao

BITS – UTC Aerospace, Bangalore, Collaboration:

Organization Professionals

Ms. Paul, Deepika, Shankar Gowda

Guest Faculty

Mr. Shirdinath Tekur, Mr. Surendra Raju

BITS – UTC Fire & Security, Bangalore, Collaboration: M.Tech. Software Systems

Guest Faculty

Mr. Prakash Goteti, Mr. Anil Kumar, Mr. K V Vamsi Krishna

BITS – Bombay Hospital, Mumbai, Collaboration: M.B.A. Hospital and Health Systems Management

Sri. B.K. Taparia, Dr. Rajkumar V. Patil, Dr. Rajesh Choumal, Dr. Rajkumar Choudhary, Dr. Sagar Sakle, Dr. Madhulika Jain, Dr. Inder Talwar, Dr. Sunila jaggi, Dr. Sujata Mehta, Dr. Asmita Sakle, Ms. G.D. Koppikar, Dr. Maya Parihar Malhotra, Dr. D.B. Modi, Dr. Nina Desai, Dr. Rajendra Goyal

BITS - Christian Medical College, Vellore, Collaboration: M.B.A. Hospital and Health Systems Management

Dr. Samuel N.J. David, Dr. Anna B. Pulimood, Dr. Abel Rajarathinam, Mr. Bijesh Kumar Yadav, Dr. Thenmozhi, Mr. Godwin, Mrs. Florence, Mr. Francis, Dr. Gowri, Dr. Grace, Mr. Arul Prakash, Mr. Joel, Mr. Nirmal, Dr. Jasmine, Mr. Joseph Selvaraj, Dr. J.V.Peter, Dr. Lallu Joseph, Mrs. Shalini Chandran, Dr. Pranay Gaikwad, Dr. T.S. Vijay Kumar, Mr. Ravishankar, Dr. Reginald Alex, Ms. Reka, Mr. Samuel Abraham, Ms. Sonia Valas, Dr. Subramani, Mr. Jacob, Dr. Vinod Shah, Mr. T.S. Ravikumar, Mr. Ronald Simon, Dr. Priya, Dr. Karthik, Ms. Manimegalai, Ms.Esther Kezia James, Dr. K.P.P.Abhilash, Mr. Ashok Pascalraj, Ms. Prabavathi, Mr. Durai Jasper, Dr. Sam Marconi, Dr. Vinod Abraham, Dr. Anu Oommen, Dr. Shalini, Dr. Kuryan George, Dr. Venkat, Dr. Hema Paul

MEMBERS OF THE GENERAL BODY

Dr. Kumar Mangalam Birla, Chancellor

Smt. Shobhana Bhartia, Pro-Chancellor

Prof. Ranendra Narayan Saha, Acting Vice-Chancellor

Shri Sidharth Birla	Prof. Asis Datta
Smt. Manjushree Khaitan	Prof. L.K. Maheshwari
Shri Hemant Kumar	Shri Raju Reddy
Prof. D. Balasubramanian	Shri Anand Sudarshan
Prof. P. Radhakrishnan	Prof. Bijay Kumar Rout Acting Registrar, Non-member Secretary

SENATE

Chairman (Acting Vice-Chancellor):

Prof. Ranendra Narayan Saha (Sr. PROF)

Vice-Chairman (Director, Pilani Campus):

Prof. Sudhirkumar Barai (Sr. PROF)

Secretary:

Prof. Bijay Kumar Rout (PROF), Acting Registrar

Directors:

Prof. Srinivasan M P (Sr. PROF), Dubai Campus

Prof. Gunaje Raghurama (Sr. PROF), K K Birla Goa Campus

Prof. G. Sundar (Sr. PROF.), Hyderabad Campus & Off-Campus Programmes & Industry Engagement

Deans:

INSTITUTE WIDE:

Pilani Campus

Prof. Ajit Pratap Singh (PROF)

Prof. Arya Kumar (PROF)

Prof. S. Gurunarayanan (PROF)

K K Birla Goa Campus

Prof. Sunil Bhand (PROF)

Hyderabad Campus

Prof. Souri Banerjee (PROF)

Prof. Sinivasa Prakash Regalla (PROF)

Prof. M B Srinivas (PROF)

CAMPUS WIDE:

Pilani Campus

Prof. Sanjay Kumar Verma (PROF)

K K Birla Goa Campus

Prof. Dhananjay Madhukar Kulkarni (PROF)

Hyderabad Campus

Prof. Niranjan Swain (PROF)

Associate Deans:

Pilani Campus

Prof. Anil Gaikwad Bhanudas **(**ASOP**)**

Prof. Anshuman Dalvi **(**PROF**)**

Prof. Dalip Kumar **(**PROF**)**

Prof. Jitendra Panwar **(**PROF**)**

Prof. Navneet Gupta **(**PROF**)**

Prof. P. Srinivasan **(**ASOP**)**

Prof. Rajeev Sakhuja **(**ASOP**)**

Prof. Srikanta Routroy **(**PROF**)**

Prof. Suresh Gupta **(**ASOP**)**

Off-Campus Centre

Prof. Annapoorna Gopal (ASOP-OC), Bangalore

Prof. Gopalakrishnan Venkiteswaran (ASOP), Chennai

Prof. P. B. Venkataraman (ASOP-OC), Hyderabad

K K Birla Goa Campus

Prof. Anupama Karuppiah (PROF)

Prof. Bharat Madhusudan Deshpande (PROF)

Prof. Meenal Kowshik (PROF)

Prof. Rajesh Mehrotra (PROF)

Prof. Neena Goveas (PROF)

Prof. Ramesha C.K. (ASOP)

Prof. Sutapa Roy Ramanan (PROF)

Prof. Veeky Baths (ASOP)

Prof. Waigaonkar Sachin Damodharrao (ASOP)

Hyderabad Campus

Prof. A. Vasan (PROF)

Prof. Anupam Bhattacharya (PROF)

Prof. Bivudutta Mishra (PROF)

Prof. Meenakshi Viswanathan (ASOP)

Prof. P. Sankar Ganesh (ASOP)

Prof. Punna Rao Ravi (PROF)

Prof. Sandip Shridharrao Deshmukh (PROF)

Prof. Vamsi Krishna Venuganti (ASOP)

Prof. Vidya Rajesh (PROF)

Prof. Sridhar Raju (ASOP)

Dubai Campus

Prof. Kumar Karuppusamy (PROF)

Prof. Priti Bajpai (PROF)

Prof. Ramanujam Karthikeyan (PROF)

Dr. A. Somasundaram, Dubai Campus

Professors (PROF):

Pilani Campus

Prof. Ajay Kumar Sah
Prof. Anil Kumar
Prof. Anil Kumar Bhat
Prof. Anu Gupta
Prof. Ashis Kumar Das
Prof. Balram Dubay
Prof. Bandi Venkata Prasad
Prof. Chandra Shekhar (Sr. PROF Emeritus)
Prof. Chandra Shekhar
Prof. Debashish Bandyopadhyay
Prof. Debi Datt Pant
Prof. Gajendra Singh Chauhan
Prof. Hari Om Bansal
Prof. I R Laskar
Prof. Janardan Prasad Misra
Prof. Kuldip Singh Sangwan
Prof. N.V. Muralidhar Rao
Prof. Navneet Goyal
Prof. Poonam Goyal
Prof. Prabhat Nath Jha
Prof. Pushp Lata
Prof. R. Mahesh
Prof. Raj Kumar Gupta
Prof. Rajiv Gupta (Sr. PROF)
Prof. Rajiv Kumar
Prof. Rashmi Ranjan Mishra
Prof. Ravi Kant Mittal
Prof. Shamsher Bahadur Singh
Prof. S.C. Sivasubramanian
Prof. Sangeeta Sharma
Prof. Shibasish Chowdhury
Prof. S. Sindhu
Prof. Surekha Bhanot
Prof. V K Chaubey
Prof. V Manjuladevi
Prof. Vishal Saxena

K K Birla Goa Campus

Prof. Amrita Chatterjee
Prof. Anjan Chattopadhyay
Prof. Arun Venkatesh Kulkarni
Prof. Ashwin Shrivasan
Prof. Bhavana P.
Prof. Dibakar Chakrabarty
Prof. Dipankar Pal
Prof. Mainak Banerjee
Prof. Mridula Goel
Prof. Mukund Keshavrao Deshmukh
Prof. Narendra Nath Ghosh
Prof. Patincharath Nandakumar
Prof. Prasanta Kumar Das
Prof. Pravin Madanrao Singru
Prof. Samit Chattopadhyay
Prof. Srinivas Krishnaswamy
Prof. Tarkeshwar Singh
Prof. Utpal Roy
Prof. Vijayashree Nayak

Hyderabad Campus

Prof. Amit Kumar Gupta
Prof. Aranya Bhuti Bhattacharjee
Prof. Chittaranjan Hota
Prof. D Sriram
Prof. Jaideep Chatterjee
Prof. K V G Chandra Sekhar
Prof. K. Sumithra
Prof. Komaragiri Srinivasa Raju
Prof. Lalita Bhanu Murthy Neti
Prof. Manab Chakravarty
Prof. N. Rajesh
Prof. Nishith Gupta
Prof. P K Thiruvikraman
Prof. P. Yogeeswari
Prof. P.N.K. Rao
Prof. Ramaiah D (Sr. PROF)
Prof. Ramakrishna Vadrevu

Prof. Sanket Goel
Prof. Srikanta Dinda
Prof. Subhendu Kumar Sahoo
Prof. Subit Kumar Saha
Prof. Suman Kapur (Sr. PROF)
Prof. Y Venkat Daseswara Rao

Dubai Campus

Prof. Dawood Jalaluddin Shariff
Prof. Krishna Kumar Singh
Prof. Neeru Sood
Prof. Ramadoss Roop Kumar
Prof. Sangili Vadivel
Prof. Thoppil George Thomas
Prof. Vijayakumar Balakrishnan

Associate Professors (ASOP):

Pilani Campus

Prof. Abhijeet Keshaorao Digalwar
Prof. Abhijit Rameshwar Asati
Prof. Anil Jindal
Prof. Aniruddha Roy
Prof. Anshuman
Prof. Anupama Mittal
Prof. Arun Kumar Jalan
Prof. Arun Maity
Prof. Arvind Kumar Sharma
Prof. Ashish Tiwari
Prof. B K Sharma
Prof. B. Vani
Prof. Bharti Khungar
Prof. Deepak Chitkara
Prof. Dheerendra Singh
Prof. Dipendu Bhunia
Prof. Geetilaxmi Mohapatra
Prof. Hare Krishna Mohanta
Prof. Harikrishnan G Nair
Prof. Holkundkar Amol Ramdas Shilpa
Prof. Indresh Kumar
Prof. J N Bandyopadhyay
Prof. Jyoti
Prof. Karunesh Kumar Gupta
Prof. Kaushar Vaidya
Prof. Krishnendra Shekhawat
Prof. Krishnendu Mondal
Prof. Kumar Neeraj Sachdev
Prof. Kumar Sankar Bhattacharya
Prof. Madhukar Mishra
Prof. Madhushree Sarkar
Prof. Manoj Kumar
Prof. Manoj Kumar Soni
Prof. Mukesh Kumar Rohil
Prof. Neetu Yadav
Prof. Niladri Sarkar
Prof. Nishit Narang
Prof. P K H Keskar
Prof. P. Chattopadhyay
Prof. Paritosh Shukla
Prof. Paul Atish Tulshiram
Prof. Prashant U Manohar
Prof. Praveen Goyal
Prof. Praveen Kumar A.V.
Prof. Rahul Singhal
Prof. Rajdeep Chowdhury
Prof. Rajeev Taliyan
Prof. Rajesh Kumar
Prof. Rajesh Prasad Mishra
Prof. Rajneesh Choubisa
Prof. Rajneesh Kumar
Prof. Rakhee
Prof. Rita Sharma
Prof. S Gangopadhyay
Prof. S K Choudhary
Prof. S Murugesan
Prof. Sailaja Nandigama
Prof. Satyendra Kumar Sharma
Prof. Saumi Ray
Prof. Shamik Chakraborty

Prof. Sharad Shrivastava
Prof. Sheth Pratik N
Prof. Shibani Khanra Jha
Prof. Shilpi Garg
Prof. Shivi Agarwal
Prof. Shuvendu Narayan Patel
Prof. Smita Raghuvanshi
Prof. Sudeshna Mukherjee
Prof. Surojit Pande
Prof. Sushila Shekhawat
Prof. Syamantak Majumder
Prof. Tapomoy Guha Sarkar
Prof. Trilok Mathur
Prof. Udayan Chanda
Prof. Uma S Dubey
Prof. Virendra S Nirban
Prof. Yashvardhan Sharma

Off-Campus Centre

Prof. K. Venkatasubramanian, Pilani
Prof. Anita Ramachandran, Bangalore
Prof. Brajabandhu Mishra, Bangalore
Prof. H. Viswanathan, Bangalore
Prof. Lucy J. Gudino, Bangalore
Prof. Satya Sudhakar Yedlapalli, Bangalore
Prof. Benu Madhab Gedam, Pune
Prof. Chetana Anoop Gavankar, Pune
Prof. Shashank Mohan Tiwari, Chennai
Prof. Sidharth Mishra, New Delhi
Prof. Sugata Ghosal, New Delhi
Prof. Gopala Krishna Koneru, Hyderabad
Prof. Ambatipudi Vamsidhar, Hyderabad
Prof. Krishnamurthy Bindumadhavan, Hyderabad
Prof. Ramakrishna Dantu, Hyderabad
Prof. Sandeep Kayastha, Hyderabad
Prof. Shekhar Rajagopalan, Hyderabad
Prof. T. Venkateswara Rao, Hyderabad
Prof. Y V K Ravi Kumar, Hyderabad

K K Birla Goa Campus

Prof. Alamelu Geetha Krishnamurthy
Prof. Amalin Prince A
Prof. Amit Setia
Prof. Anasuya Ganguly
Prof. Anil Kumar
Prof. Anita Bhagirathji Agrawal
Prof. Arnab Banerjee
Prof. Basabdatta Bhattacharya
Prof. Basavadatta Mitra
Prof. Biju K. Raveendran Nair
Prof. Chandradew Sharma
Prof. Debasis Patnaik
Prof. Dhanumjaya Palla
Prof. Gaurav Dar
Prof. Geetha Bakilapadavu
Prof. Judith Maria Braganca
Prof. Karthikeyan Ganesarethinam
Prof. Kundan Kumar
Prof. Malabika Biswas
Prof. Nitin Sharma
Prof. Prasanna Kumar Nekkare
Prof. Rabi Narayan Panda
Prof. Raghu Nath Behera
Prof. Raghunath Anand Ratabole
Prof. Ram Shanker Patel
Prof. Ranjan Dey
Prof. Rayson K. Alex
Prof. Rudra Prasad Pradhan
Prof. Sampatrao Dagu Manjare
Prof. Sandhya Mehrotra
Prof. Sanjay Kumar Sahay
Prof. Senthamarai Kannan Ethirajulu
Prof. Shalini Upadhyay
Prof. Sharad Mahadeo Sontakke
Prof. Shibu Clement
Prof. Snehanshu Saha
Prof. Subhadeep Banerjee

Prof. Sukanta Mondal
Prof. Sumit Biswas
Prof. Tarun Kumar Jha
Prof. Teny Theresa John
Prof. Toby Joseph
Prof. V.V.S.N.V. Prasad Chundru
Prof. Vijay Madhukar Patankar

Hyderabad Campus

Prof. A. Michael Alphonse
Prof. A. Ramesh Babu
Prof. Amit Nag
Prof. Amrita Priyadarshini
Prof. Aravinda N. Raghavan
Prof. Arkamitra Kar
Prof. Arti Dhar
Prof. Aruna Malapati
Prof. B. Harihara Venkataraman
Prof. Bahurudeen A
Prof. Balaji Gopalan
Prof. Balaji Krishnamurthy
Prof. Balaram Ghosh
Prof. BVVSN Prabhakar Rao
Prof. Chandu Parimi
Prof. Debasri Bandyopadhyay
Prof. Dipak Kumar Satpathi
Prof. Durba Roy
Prof. Jagadeesh Anmala
Prof. Jaganmohan Jonnalagadda
Prof. Jayanty Subbalakshmi
Prof. Jeevan Jaidi
Prof. Kannan Ramaswamy
Prof. Karthik Venkateshan
Prof. Kumar Pranav Narayan
Prof. M.G. Prasuna
Prof. Manish Kumar
Prof. Morapakala Srinivas
Prof. Naga Mohan Kommu
Prof. Naraparaju Kishore Kumar
Prof. Onkar P. Kulkarni
Prof. Prasant Kumar Pattnaik
Prof. R Parameshwaran
Prof. R. Gururaj
Prof. R. Krishnan
Prof. R. Raghunathan
Prof. Ramakrishnan Ganesan
Prof. Runa Kumari
Prof. Sabareesh Geetha Rajasekharan
Prof. Shilpaa Anand
Prof. Sridev Mohapatra
Prof. Subhash Narayan Karbelkar
Prof. Sujith R
Prof. Sumit Kumar Vishwakarma
Prof. Surya Shankar Dan
Prof. Swati Biswas
Prof. Tathagata Ray
Prof. V Satya Narayana Murthy
Prof. V Vinayaka Ram
Prof. Venkateswaran Rajagopalan
Prof. Vikranth Kumar Surasani

Dubai Campus

Prof. Kalaichelvi Venkatesan
Prof. Kavita Sunil Jerath
Prof. Maneesha
Prof. Prakash Kumar Beri
Prof. Sujala D. Shetty
Prof. Suhel Ahmad Khan
Prof. Trupti Swarup Gokhale
Prof. Vijaya Ilango

Heads of Departments:

Pilani Campus

Prof. Anupam Singhal (PROF)
Prof. Arun Kumar Giri (PROF)
Prof. Banasri Roy (ASOP)
Prof. Devendra Kumar (ASOP)
Prof. Devika (PROF)
Prof. Hitesh Dutt Mathur (PROF)

Prof. Hemant R Jadhav (PROF)

Prof. Leela Rani (ASOP)

Prof. Mani Sankar Dasgupta (PROF)

Prof. P R Deepa (PROF)

Prof. Rakesh Choubisa (ASOP)

Prof. Ram Kinkar Roy (PROF)

Prof. Sudeept Mohan (PROF)

K K Birla Goa Campus

Prof. Abhijit Jayant Pethe(ASOP)

Prof. Aswini Kumar Mishra (ASOP)

Prof. Halan Prakash (ASOP)

Prof. Jajati Keshari Sahoo (ASOP)

Prof. Radhika Vathsan (ASOP)

Prof. Ranjit Shankarrao Patil (ASOP)

Prof. Reena Cheruvalath (ASOP)

Prof. Saroj Sundar Baral (PROF)

Prof. Srikanth Mutnuri (PROF)

Prof. Vinayak Shashikant Naik (PROF)

Hyderabad Campus

Dr. Biswanath Dash (ASTP)

Dr. Dushyant Kumar (ASTP)

Prof. A Sajeli Bugum (PROF)

Dr. Murari Raja Raja Varma (ASTP)

Prof. Alivelu Manga Parimi (ASOP)

Prof. G. Geethakumari (ASOP)

Prof. I. Sreedhar (PROF)

Prof. Jayati Ray Dutta (ASOP)

Prof. N. Suresh Kumar Reddy (PROF)

Prof. Pradyumn Kumar Sahoo (PROF)

Prof. Sarmistha Banik (ASOP)

Prof. Sounak Roy (ASOP)

Dubai Campus

Dr. Nishant Harishbhai Pandya (ASTP)

Dr. Priyank Upadhyaya (ASTP)

Dr. Raja Muthalagu (ASTP)

Prof. Shazi Shah Jabeen (PROF)

Dr. Jagadish Nayak (ASOP)

Dr. Vivek Balachandra Kartha (ASTP)

Prof. Geetha Kannan (ASOP)

Prof. Ramachandran Subramanian (ASOP)

Co-opted Members:

Prof. Jitendra Singh Rathore (ASOP), Pilani Campus

Dr. Pawan Kumar Ajmera (ASTP), Pilani Campus

Dr. Manoj Kumar Pandey (ASTP), K K Birla Goa Campus

Dr. Vivek Rangarajan (ASTP), K K Birla Goa Campus

Prof. Rahul Nigam (ASOP), Hyderabad Campus

Prof. Anasua Guharay (ASOP), Hyderabad Campus

Dr. Eldhose Iype (ASTP), Dubai Campus

Dr. Mainak Dutta (ASTP), Dubai Campus

Librarians:

Dr. Ranjan Sinha Thakur, Pilani Campus

Dr. Sivakumar Raja Rathinam, Dubai Campus

Shri M S Udaya Kumar, Hyderabad Campus

Chief Wardens:

Prof. Navin Singh (ASOP), Pilani Campus

Prof. Angshuman Sarkar (PROF), K K Birla Goa Campus

Prof. Phaneendra Kiran Chaganti (ASOP), Hyderabad Campus

Dr. Naveen Kumar Shrivastava (ASTP), Dubai Campus

Placement Officer:

Prof. Hari Om Bansal (PROF)

Student Members:

Mr. Hari Raghavendran B, ID 2018A4PS0514P

Ms. Kripa Amarendra Jaipal,ID 2018A4PS0048U

Ms. Nishi Singh, ID 2019H1030108G

Mr. Lokesh Kumar, ID 2018PHXF0014G

Mr. Kaushik Sathish Kumar, ID 2018B2A30830H

RESEARCH BOARD

Chairman (Acting Vice-Chancellor):

Prof. Ranendra Narayan Saha

Vice-Chairman-Dean Academic-Graduate Studies and Research (AGSR)

Prof. M B Srinivas

Secretary – Acting Registrar

Prof. Bijay Kumar Rout

Directors of all BITS campuses (ex-officio):

1. Prof. Sudhirkumar Barai, Pilani Campus
2. Prof. Srinivasan M P, Dubai Campus
3. Prof. Gunaje Raghurama, K K Birla Goa Campus
4. Prof. G. Sundar, Hyderabad Campus

Deputy Directors (ex-officio):

Vacant

Dean, Sponsored Research and Consultancy (ex-officio):

Prof. Sunil Bhand

Faculty Members:

1 Prof. S.B. Singh, Pilani Campus

2 Prof. P.R. Deepa, Pilani Campus

3 Prof. Pravin M. Singru, K K Birla Goa Campus

4 Prof. Raghu Nath Behera, K K Birla Goa Campus

5 Prof. Sarmistha Banik, Hyderabad Campus

6 Dr. Raja Muthalagu, Dubai Campus

7 Dr. Eldhose Iype , Dubai Campus

ACADEMIC COUNSELLING BOARD

I. Pilani Campus:

Chairman: Associate Dean AUGS
Prof. Suresh Gupta

Associate Dean AGSR
Prof. Jitendra Panwar

Associate Dean, SWD
Prof. Srikanta Routray

Two Faculty Members
Dr. Amit Jain
Dr. Madhushree Sarkar

Two Student Members
Ms. Simran Sodhi,
ID No. 2018B1A70896P
Mr. Gaurav Bellal Natesh,
ID No. 2018A1PS0027P

II. K K Birla Goa Campus:

Chairman: Associate Dean AUGS
Prof. Neena Goveas

Associate Dean AGSR
Prof. Bharat Madhusudan Deshpande

Associate Dean, SWD
Prof. Ramesha C.K

Two Faculty Members
Prof. Malabika Biswas
Dr. Varinder Singh

Two Student Members
Ms. Kopal Srivastava
ID No. 2018B1AA0594G
Mr. Mihir Mahajan
ID No. 2018B3A70285G

III. Hyderabad Campus:

Chairman: Associate Dean AUGS
Prof. A. Vasan

Associate Dean AGSR
Prof. Venkata Vamsi Krishna Venuganti

Associate Dean, SWD
Prof. Sandip Shridharrao Deshmukh

Two Faculty Members
Prof. Shilpa Anand
Prof. Sumit Kumar Vishwakarma

Two Student Members
Mr Varishth Reddy
ID No. 2018B3A70022H
Ms. Eva Tiwari
ID No. 2018B5A70816H

IV. Dubai Campus:

Chairman: Associate Dean AUGS
Prof. Kumar Karuppusamy

Associate Dean AGSR
Prof. Ramanujam Karthikeyan

Associate Dean, SWD
Prof. Priti Bajpai

Two Faculty Members
Dr. Sunil Thomas
Vacant

Two Student Members
Mr. Rahul Ashok Sharma
ID No. 2017A4PS0182U
Ms. Anushka Patil
ID No. 2017A7PS0233U

ACADEMIC MONITORING BOARD

Chairman : Dean, WILPD: Prof. S. Gurunarayanan **Associate Deans, WILPD:** Prof. P. Srinivasan Prof. Anupama Karuppiah Prof. Punna Rao Ravi Prof. Sridhar Raju Prof. Gopalakrishnan Venkiteswaran Prof. Venkataraman P.B.	**Dean, Academic – Under Graduate Studies (AUGS)** Prof. Ajit Pratap Singh **Dean, Practice School Division** Prof. Sinivasa Prakash Regalla **Dean, Academic - Graduate Studies and Research** Prof. M B Srinivas **Associate Dean Academic - Under Graduate Studies (AUGS) (Pilani Campus)** Prof. Suresh Gupta

STANDING COMMITTEE FOR STUDENTS' DISCIPLINE

I. Pilani Campus	**II. K K Birla Goa Campus**
Chairman: Associate Dean, SWD Prof. Srikanta Routray **Chief Warden:** Prof. Navin Singh **Faculty Members (2):** 1. Prof. Bharti Khungar 2. Dr. Praveen Goyal **Student Member (2):** 1. Mr. Saurav Virmani, ID No. 2017A7PS0090P 2. Ms. Riya Ramabadhran, ID No. 2017B2A40990P	**Chairman: Associate Dean, SWD** Prof. Ramesha C.K. **Chief Warden:** Prof. Angshuman Sarkar Faculty Members (2) 1. Dr. Paramita Haldar 2. Prof. Anil Kumar Student Member (2): 1. Ms. Anwesha Panda., ID No. 2018A8PS0515G 2. Mr. Sampreet Arthi, ID No. 2018B3A70703G
III. Hyderabad Campus	**IV. Dubai Campus**
Chairman: Associate Dean, SWD Prof. Sandip Shridharrao Deshmukh **Chief Warden:** Prof. Phaneedra Kiran Chaganti **Faculty Members (2):** 1. Prof. Swati Biswas 2. Dr. Kota Venkata Ratnam **Student Member (2):** 1. Mr. Sarthak Sheoran, ID No. 2018A7PS0206H 2. Ms. Ananya Mohapatra, ID No. 2018B3AA0037H	**Chairman: Dean, SWD** Prof. Priti Bajpai **Chief Warden:** Dr. Naveen Kumar Shrivastava **Faculty Members (2):** 1. Dr Devika Sharma 2. Dr Gulshan Kumar **Student Member (2):** 1. Mr Prajit Samir Rawte , ID No. 2017A4PS0079U 2. Ms. Aparna Dwivedi , ID No. 2018A7PS0294U

LIBRARY COMMITTEE

I. Pilani Campus:

S.N	Department	Name of the member
1.	Biological Sciences	Prof. B. Vani
2.	Civil Engineering	Prof. S. N. Patel
3.	Chemical Engineering	Dr. Somak Chatterjee
4.	Chemistry	Prof. Anil Kumar
5.	Computer Science & Information Systems	Dr. Jennifer Ranjan
6.	Economics & Finance	Dr. Rahul Arora
7.	Electrical & Electronics Engineering	Dr. Sandeep Joshi
8.	Humanities and Social Sciences	Dr. Muhammed Afzal Puthusseri
9.	Mathematics	Dr. Anirudh Rana
10.	Mechanical Engineering	Dr. Subhanjan Bhattacharya
11.	Management	Dr. Mohammad Faraz Naim
12.	Pharmacy	Prof. Anupama Mittal
13.	Physics	Prof. Subhashis Gangopadhyay

Dr. Ranjan Sinha Thakur (Librarian) - Chairman of the Library Committee

II. K K Birla Goa Campus:

1.	Biological Sciences	Dr. Tusar Tirtha Saha
2.	Chemical Engineering	Dr. Pradeep Kumar Sow
3.	Chemistry	Dr. Subhasish Roy
4.	Computer Science & Information Systems	Prof. Basabdatta Sen Bhattacharya
5.	Economics	Dr. Richa Shukla
6.	Electrical & Electronics Engineering	Dr. Naveen Gupta
7.	Humanities and Social Sciences	Dr. Hareesh A.G
8.	Mathematics	Prof. Vijay Madhukar Patankar
9.	Mechanical Engineering	Dr. Biswajit Das
10.	Physics	Prof. Prasanta Kumar Das

Dr. Anuradha V (Deputy Librarian) - Chairman of the Library Committee

III. Hyderabad Campus:

S.N.	Department	Name of the member
1.	Biological Sciences	Dr. Vivek Sharma
2.	Civil Engineering	Dr. Shivang Sekhar
3.	Chemical Engineering	Dr. Arnab Dutta
4.	Chemistry	Dr. Himanshu Aggarwal
5.	Computer Science & Information Systems	Dr. Venkatakrishnan Ramaswamy
6.	Economics and Finance	Dr. Shreya Biswas
7.	Electrical & Electronics Engineering	Dr. Sumit Kumar Chatterjee
8.	Humanities and Social Sciences	Dr. Aswathy Raveendran Submitted resignation and her reliving is 05-08-2021) - Will update the details of new member once it is done)
9.	Mathematics	Dr. P T V Praveen Kumar
10.	Mechanical Engineering	Dr. Dheeraj Agarwal (Left. Will update the details of new member once it is done)
11.	Pharmacy	Dr. Onkar Kulkarni
12.	Physics	Dr. Asrarul Haque

Shri M.S. Uday Kumar (Deputy Librarian) - Chairman of the Library Committee

IV. Dubai Campus:

S.N.	Department	Name of the member
1.	Biotechnology	Dr. Mainak Dutta
2.	Chemical Engineering	Dr. Eldhose Iype
3.	Civil Engineering	Dr. Deepthi Mary Dilip
4.	Computer Science	Dr. Tamizharasan Periyasamy
5.	Electrical & Electronics Engineering, Electronics and Communication Engineering and Electronics and Instrumentation Engineering	Dr. Kalaichelvi Venkatesan
6.	General Sciences	Dr. Somasundaram Arumugam
7.	Humanities and Social Sciences	Dr. Nitin S. Vihari Poluru
8.	Mechanical Engineering	Dr. Naveen Kumar Shrivastava

Dr. Sivakumar Raja Rathinam (Librarian) - Chairman of the Library Committee

ACADEMIC GOVERNING COMMITTEE

Dean, Academic – Under Graduate Studies

Prof. Ajit Pratap Singh

Associate Dean, Academic–Undergraduate Studies from each campus

Prof. Suresh Gupta, Pilani Campus
Prof. Neena Goveas, K K Birla Goa Campus
Prof. A. Vasan, Hyderabad Campus
Prof. Kumar Karuppusamy, Dubai Campus

Dean, Practice School Divison

Prof. S. P. Regalla, Hyderabad Campus

Dean, Academic - Graduate Studies and Research

Prof. M B Srinivas

Dean, Work Integrated Learning Programmes Division

Prof. S. Gurunarayanan

Professor-incharge BITS Entrance Examinations

Prof. Chittranjan Hota, Hyderabad Campus

Associate Dean, Academic–Graduate Studies and Research from each campus

Prof. Jitendra Panwar, Pilani Campus
Prof. Bharat Madhusudan Deshpande, K K Birla Goa Campus
Prof. Venkata Vamsi Krishna Venuganti, Hyderabad Campus
Prof. Ramanujam Karthikeyan, Dubai Campus

DOCTORAL COUNSELLING COMMITTEE

Dean, Academic - Graduate Studies and Research (AGSR)

Prof. M B Srinivas

Dean, Sponsored Research and Consultancy

Prof. Sunil Bhand

Dean, Academic–Undergraduate Studies (AUGS)

Prof. Ajit Pratap Singh

Associate Dean, AGSR of each campus

Prof. Jitendra Panwar, Pilani Campus
Prof. Bharat Madhusudan Deshpande, K K Birla Goa Campus
Prof. Venkata Vamsi Krishna Venuganti, Hyderabad Campus
Prof. Ramanujam Karthikeyan, Dubai Campus

One faculty member from each campus to be nominated by the Senate for a period of two years

1. Prof. Abhijit R. Asati, Pilani Campus
2. Prof. Halan Prakash, K K Birla Goa Campus
3. Prof. N. Suresh Kumar Reddy, Hyderabad Campus
4. Dr. Vilas Haridas Gaidhane, Dubai Campus

Convenorship rotates amongst these members depending on the item to be discussed

ADMISSIONS COMMITTEE

Chairman – Acting Vice-Chancellor

Prof. Ranendra Narayan Saha

Members

Director, Pilani Campus

Prof. Sudhirkumar Barai

Director, K K Birla Goa Campus

Prof. Gunaje Raghurama

Director, Hyderabad Campus

Prof. G. Sundar

Director, Dubai Campus

Prof. Srinivasan M P

Convenor: Professor-incharge BITS Entrance Examinations

Prof. Chittaranjan Hota

Special Invitees:

Dean (AGSR)

Prof. M B Srinivas

Dean (AUGS)

Prof. Ajit Pratap Singh

Faculty-incharge (First Degree Admission Tests)

Dr. Sachin U. Belgamwar

Faculty-incharge (Higher Degree Admission Tests)

Prof. Shamik Chakraborty

Associate Dean (AUGS) Dubai Campus

Prof. Kumar Karuppusamy

ACADEMIC CALENDAR FOR PILANI CAMPUS

SOME IMPORTANT DATES

2021

JULY

Su	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER

Su	M	T	W	Th	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

NOVEMBER

Su	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

2022

JANUARY

Su	M	T	W	Th	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

FEBRUARY

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL

Su	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
28	29	30				

HOLIDAYS RECESS

First Semester 2021-2022

July 5 (M)	Registration for Practice School II
July 5 (M)	Practice School II begins
July 21 (W)	Id-ul-Zuha* (H)
August 15 (Su)	Independence Day (H)
August 20 (F)	First Semester begins
August 20 (F)	Registration for continuing students
August 21 (S)	Class-work begins
August 30 (M)	Janmashtami (H)
September 4 (S)	Last day for substitution of courses
September 10 (F)	Ganesh Chaturthi (H)
October 2 (S)	Mahatma Gandhi's Birthday (H)
October 15 (F)	Dussehra (H)
October 16 (S) to October 25 (M)	Mid Semester Exams
November 19 (F)	Gurunanak's Birthday (H)
October 29 (F)	Last day for withdrawal from courses
November 1 (M) – 3 (W)	Midterm break (Classwork suspended)
November 4 (Th) – 5 (F)	Diwali (H)
December 9 (Th)	Last day of class work
December 11 (S)	Comprehensive examination begins
December 15 (W)	Practice School II ends
December 25 (S)	Christmas (H)
December 28 (T)	Comprehensive examination ends
December 28 (T)	First Semester ends
December 30 (Th) to January 13 (Th)	Recess

*** Observance of the Holiday is subject to the sighting of the Moon**

Second Semester 2021-2022

January 14 (F)	Makar Sakranti (H)
January 15 (S)	Second Semester begins
January 15 (S)	Registration for all students
January 15 (S)	Registration for Practice School II
January 17 (M)	Practice School II begins
January 17 (M)	Class-work begins
January 26 (W)	Republic Day (H)
January 31 (M)	Last day for substitution of courses
February 5 (S)	Basant Panchami (H)
March 1 (T)	Maha Shivratri (H)
March 9 (W) to March 16 (W)	Mid Semester Exams
March 18 (F)	Holi (H)
March 17 (Th)-19 (S)	Midterm break (Classwork suspended)
March 28 (M)	Last day for withdrawal from courses
April 10 (Su)	Ram Navami (H)
April 14 (Th)	Mahavir Jayanti (H) and Ambedkar Jayanti (H)
April 15 (F)	Good Friday
April 28 (Th)	Registration for Practice School I
May 3 (T)	Id-ul-Fitr* (H)
May 4 (W)	Last day for class work
May 6 (F)	Comprehensive Examination begins
May 16 (M)	Budhha Purnima (H)
May 23 (M)	Comprehensive Examination ends
May 23 (M)	Second Semester ends
May 25 (W)	Summer Vacation begins
May 28 (S)	Summer Term begins
May 30 (M)	Practice School I begins
June 24 (F)	Practice School II ends
July 22 (F)	Practice School I ends
July 23 (S)	Summer Term ends
July 23 (S)	Summer Vacation ends

ACADEMIC CALENDAR FOR K. K. BIRLA GOA CAMPUS

SOME IMPORTANT DATES (Ongoing Students)

2021

JULY

Su	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER

Su	M	T	W	Th	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

NOVEMBER

Su	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

2022

JANUARY

Su	M	T	W	Th	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

FEBRUARY

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL

Su	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
28	29	30				

HOLIDAYS RECESS

First Semester 2021-2022

July 5, 2021 (M)	Registration for Practice School II
July 5 (M)	Practice School II begins
July 21 (W)	Eid-ul-Zuha(H)*
August 15 (Su)	Independence Day(H)
August 20 (F)	First Semester begins
August 20 (F)	Registration for all students
August 21 (S)	Class-work begins
August 30 (M)	Janmashtami (H)
September 4 (S)	Last day for substitution of courses
September 10 (F)	Ganesh Chaturthi(H)
September 30 (Th)	Last day for submission of Application for Merit-Cum Need Scholarship
October 2 (S)	Mahatma Gandhi's Birthday (H)
October 12 (T)	Friday's Timetable to be followed
October 15(F)	Dussehra (H)
October 16(S) to 25(M)	Mid-semester Exam(Classwork suspended)
October 29 (F)	Last day for withdrawal from courses
November 1(M)	Last day of submission of Mid-semester Exam Information & Mid-semester grading
November 1 (M)-3 (W)	Midterm break(Classwork suspended)
November 4 (Th)-5 (F)	Diwali (H)
November 18 (Th)	Friday's Timetable to be followed
November 19 (F)	Guru Nanak's Birthday (H)
December 9 (Th)	Last day of Pre-comprehensive exam marks display
December 9 (Th)	Last day for class work
December 11 (S)	Comprehensive Examination begins
December 15 (W)	Practice School II ends
December 19 (Su)	Goa Liberation Day(H)
December 25 (S)	Christmas (H)
December 28 (T)	Comprehensive Examination ends
December 28 (T)	First Semester ends
December 30(Th) 2021 to January 13(Th) 2022	Recess

Second Semester 2021-2022

January 14 (F)	Makar Sankranti (H)
January 15, 2022 (S)	Second Semester begins
January 15 (S)	Registration for all students
January 15 (S)	Registration for Practice School II
January 17 (M)	Practice School II begins
January 17 (M)	Class-work begins
January 26 (W)	Republic Day (H)
January 31 (M)	Last day for substitution of courses
February 5 (S)	Basant Panchmi and Founder's Day (H)
February 20 (Su)	Last day for submission of Application for Merit-Cum Need Scholarship
March 9(W)-16 (W)	Mid-semester Exam(Class-work suspended)
March 17 (Th)-19 (S)	Midterm break(Classwork suspended)
March 18 (F)	Holi (H)
March 23 (W)	Last day of submission of Mid-semester Exam Information & Mid-semester grading
March 28 (M)	Last day for withdrawal from courses
April 10 (Su)	Ram Navami (H)
April 14 (Th)	Mahavir Jayanti (H)
April 15 (F)	Good Friday(H)
April 28 (Th)	Registration for Practice School I
May 3 (T)	Id-ul-Fitr (H)*
May 4 (W)	Last day of Pre-comprehensive exam marks display
May 4 (W)	Last day for class work
May 6 (F)	Comprehensive Examination begins
May 16 (M)	Budh Purnima (H)
May 23 (M)	Comprehensive Examination ends
May 23 (M)	Second Semester ends
May 25 (W)	Summer Vacation begins
May 28 (S)	Summer Term begins
May 30 (M)	Practice School I begins
June 24 (F)	Practice School II ends
July 22 (F)	Practice School I ends
July 23 (S)	Summer Term ends
July 23 (S)	Summer Vacation ends

**** Observance of the holiday is subject to the sighting of the Moon.***

ACADEMIC CALENDAR FOR HYDERABAD CAMPUS

SOME IMPORTANT DATES

2021

JULY

Su	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER

Su	M	T	W	Th	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

NOVEMBER

Su	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

2022

JANUARY

Su	M	T	W	Th	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

FEBRUARY

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL

Su	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE

Su	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
28	29	30				

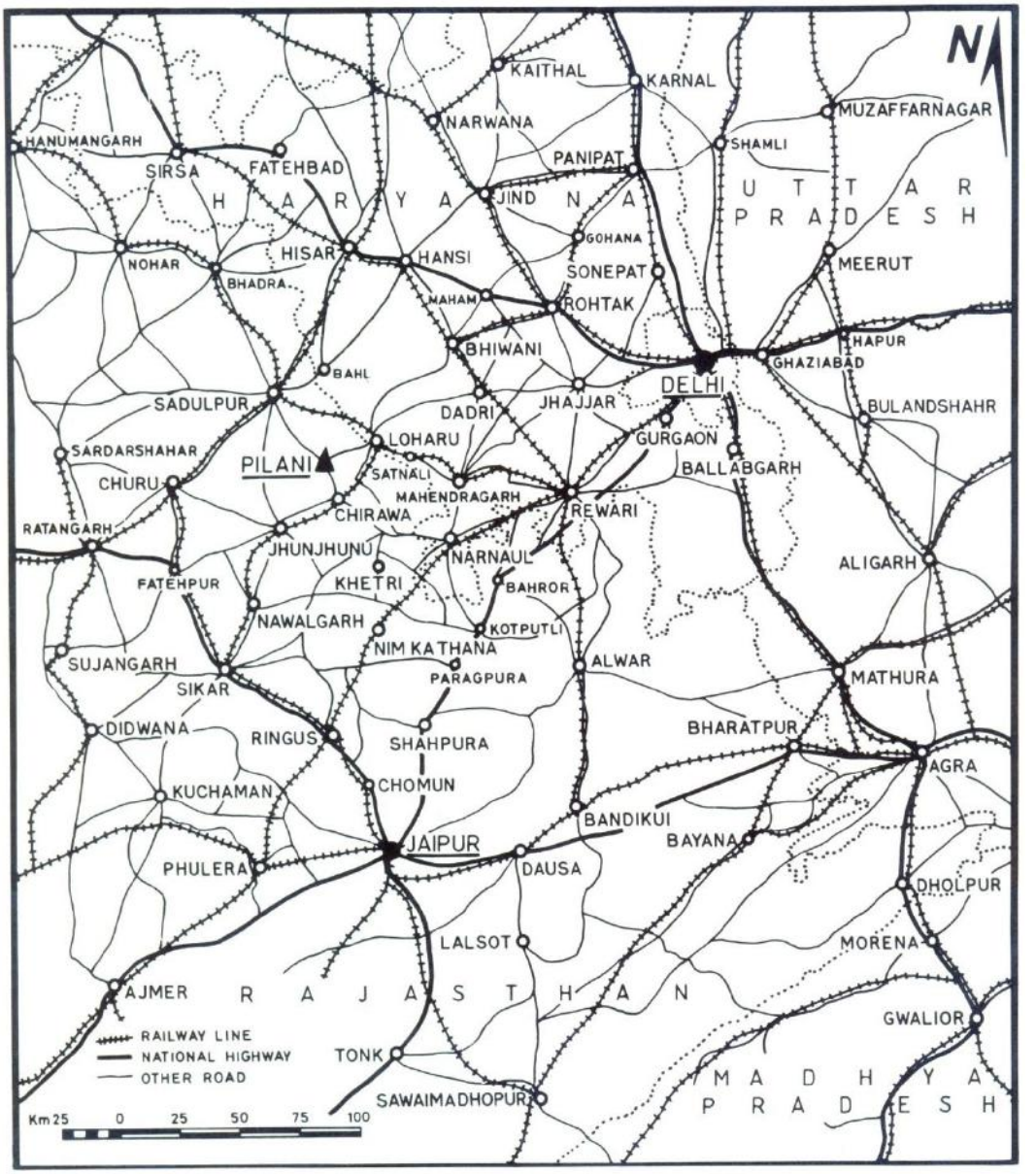
HOLIDAYS RECESS

First Semester 2021-2022

July 5 (M)	Registration for Practice School II
July 5 (M)	Practice School II begins
July 21(W)	Id-ul-Zuha(H)
August 15 (Su)	Independence Day (H)
August 20 (F)	First Semester begins
August 20 (F)	Registration for all students
August 21 (S)	Class-work begins
August 30 (M)	Janmashtami (H)
September 4 (S)	Last day for substitution of courses
September 9 (Th)	Friday timetable to be followed in spite of being Thursday
September 10 (F)	Ganesh Chaturthi (H) (Campus specific holiday)
October 2 (S)	Mahatma Gandhi's Birthday (H)
October 15 (F)	Dussehra (H)
October18(M) to October. 23 (S)	Mid Semester Exams
October 29 (F)	Last day for withdrawal from courses
October 30 (S)	Last day of submission of mid-semester grading
Nov 1 (M) - 3 (W)	Midterm break (Classwork suspended)
November 4 (TH)-5(F)	Diwali (H)
November 19 (F)	Guru Nanak's Birthday (H)
November 20 (S)	Friday timetable to be followed in spite of being Saturday
December 9 (Th)	Last day of class work
December 11 (S)	Comprehensive examination begins
December 15 (W)	Practice School II ends
December 25 (S)	Christmas (H)
December 28 (T)	Comprehensive examination ends
December 28 (T)	First Semester ends
December 30(Th) to January 13(Th)	Recess

Second Semester 2021-2022

January 15 (S)	Second Semester begins
January 15 (S)	Registration for all students
January 15 (S)	Registration for Practice School II
January 17 (M)	Practice School II begins
January 17 (M)	Class-work begins
January 26 (W)	Republic Day (H)
January 31 (M)	Last day for substitution of courses
January 31 (M)	Saturday Timetable to be followed inspite of being Monday
February 5 (S)	Basant Panchami (H)
March 8 (T)	Thursday Timetable to be followed inspite of being Tuesday
March 9 (W)	Friday Timetable to be followed inspite of being Wednesday
March 10(Th) to March 16(W)	Mid Semester Exams (Classwork suspended)
March 17(Th)-19 (S)	Midterm break (Classwork suspended)
March 18 (F)	Holi (H)
March 26 (S)	Last day of Mid-semester Grade submission
March 28 (M)	Last day for withdrawal from courses
April 2 (S)	Ugadi (H) (Campus specific holiday)
April 10 (SU)	Ram Navami (H)
April 14 (Th)	Mahavir Jayanti (H)
April 15 (F)	Good Friday (H)
April 28 (Th)	Registration for Practice School I
May 1 (M)	Saturday Timetable to be followed inspite of being Monday
May 4 (W)	Last day for class work
May 3 (T)	Id-ul fitr (H)
May 6 (F)	Comprehensive Examination begins
May 16 (M)	Budha Purnima (H)
May 23 (M)	Comprehensive Examination ends
May 23 (M)	Second Semester ends
May 25 (W)	Summer Vacation begins
May 28 (S)	Summer Term begins
May 30 (M)	Practice School I begins
June 24 (F)	Practice School II ends
July 22 (F)	Practice School I ends
July 23 (S)	Summer Term ends
July 23 (S)	Summer Vacation ends



ROUTE TO PILANI

Igniting young minds for 57 years, since 1964

- Institute of Eminence status by MHRD in 2018
- UG , PG, PhD programs in Science, Engineering, Management & Pharmacy
- Residential campuses in Pilani, Goa, Hyderabad, and Dubai
- NIRF 2020- University Rank: 15 and Pharmacy Rank : 6
- Ranked in QS World subject ranking 2021 with 7 departments in top 500 and Pharmacy department in top 200, 4th from India.
- No. 1 Technical institute in non-govt. category by India Today, The Week and Education World.
- Eminent alumni in academia, industry and government across the globe

BITS continues to excel & grow…

- Top class faculty, with doctoral and post-doctoral experience in leading world class universities
- Transparent and on-line process to admit top class students only on merit
- 17,000+ on-campus students, and growing further
- Curriculum offers hands-on experiential learning and humanities orientation
- Dual-degree option offers specialization in two disciplines
- Merit and need-based scholarship for UG, PG students

…with a focus on research & innovation…

- Enhanced research outcome , nearly 1500 doctoral students
- Fast growing sponsored research eco-system
- Technology business incubators and entrepreneurship cell in each campus
- Pioneering efforts in digital education
- DST Grant of 125 Cr on NMICPS

…Work Integrated Learning Program for Industry professionals

- Tie up with more than 200 companies
- 22,500+ industry professionals enrolled for a formal degree
- Flexible course programs throughout the academic year

…and deep industry engagement

- Strong linkages with industry through its practice based curriculum and pedagogy, research and consultancy
- Over 700 pre-placement offers in 2020-21
- Industry participation in curriculum design and review
- Unique 30 week industry immersion embedded in the curriculum
- Record of impeccable placement in Indian & multinational companies
- Faculty “immersion” in industry brings industry perspective to classroom
- Growing industry-sponsored research and consulting

BITS Pilani
Pilani | Dubai | Goa | Hyderabad
Pilani-333 031, Rajasthan, India.
www.bits-pilani.ac.in

bulletin
2021-2022