



Birla Institute of Technology & Science, Pilani K K Birla Goa Campus

DEPARTMENT OF CHEMICAL ENGINEERING

The Department of Chemical Engineering will offer a Higher Degree programme, **M.E. (Chemical)** in the year 2014 – 2015. This programme is so structured that a student can also obtain a specialization degree, i.e. **M.E. (Chemical) with specialization in Nuclear Engineering. Irrespective of whether a student opts for the specialization or not**, he or she **will** have to register for same set of compulsory courses to meet the requirements of the M.E. (Chemical) programme. In the case of Nuclear Engineering specialization, students will have to complete 3 courses from a pool of Nuclear Engineering related elective courses (**as identified by the Department of Chemical Engineering**) to meet requirements of the Degree.

Duration and Requirements (M.E Chemical):

- Duration of the program: 4 semesters (2 years)
- Number of Credit Units: 64 (min)
- Coursework: 8 courses and 32 units (min): 5 compulsory and 3 elective courses¹
- PS/Dissertation: 16 units (min) to 32 units: (max)

¹ Students will register for elective courses from a pool of electives as prescribed by the Department

Duration and Requirements (M.E Chemical) with specialization in Nuclear Engineering

- Duration of the program: 4 semesters (2 years)
- Number of Credit Units: 64 (min)
- Coursework: 8 courses and 32 units (min): 5 compulsory and 3 specialization related elective courses¹
- Dissertation: 2 Semester (32 units) of which at least one Semester will be at **Bhabha Atomic Research Centre (BARC, Mumbai), Nuclear Fuel Complex (NFC, Hyderabad) or any other unit of Department of Atomic Energy**

¹ Students can register for a minimum of 3 and a maximum of 6 courses related to the specialization as prescribed by the Department

Students opting for the M.E. Chemical Engineering programme may opt for electives from the Nuclear Engineering pool **subject to approval from the Department**. A Research Methodology course will be prescribed for both programmes as part of the coursework requirement.

Keeping in mind the increasing interest of the Department to involve Higher Degree students in research and to encourage students' interested in pursuing research leading to a PhD degree in the Department (on completion of the M.E. programme), students enrolled in Higher Degree programme will have the flexibility of pursuing Dissertation of duration between one and two semesters. **However for year 2014 – 2015, students will only be allowed to enroll for a 2 Semester Higher Degree Dissertation programme.**

PROPOSED STRUCTURE FOR THE M.E. CHEMICAL ENGINEERING PROGRAMME

Year	Semester I		Unit	Semester II		Unit
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	* ¹
		Elective I	* ¹	BITS G661	Research Methodology	* ¹
		Elective II	* ¹		Elective III	*
		Total	16 (min)		Total	16 (min)
II	Semester III			Semester IV		
	BITS GXXX ²	Dissertation	16	BITS GXXX ²	Dissertation	16
		Total	16		Total	16

¹Number of units to be confirmed ²Course code to be confirmed

POOL OF ELECTIVES FOR M.E. IN CHEMICAL ENGINEERING

- CHE C421 Biochemical Engineering
- CHE C473 Advanced Process Control
- CHE G512 Petroleum Refining and Petrochemicals
- CHE G513 Environmental Management Systems
- CHE G522 Polymer Technology
- CHE G524 Introduction to Multiphase Flow

- CHE G525 Chemical Process and Equipment Design
- CHE G526 Nuclear Engineering
- CHE G527 Energy Conservation and Management
- CHE G551 Advanced Separation Technology
- CHE G528 Introduction to Nanoscience & Nanotechnology
- CHE G529 Paper and Pulp Technology
- CHE G532 Alternate Energy Resources
- CHE G553 Statistical Thermodynamics
- CHE G554 Computational Fluid Dynamics
- CHE G556 Electrochemical Engineering
- CHE G557 Energy Systems Engineering
- CHE G558 Chemical Process Optimization
- CHE G613 Advanced Mass Transfer
- CHE G614 Advanced Heat Transfer
- CHE G619 Process Intensification
- CHE G620 Energy Integration Analysis
- BITS F418 Introduction to Biomedical Engineering

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):

Course Code	Course Name	Units
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

The information provided above is subject to modifications whenever appropriate. For further details contact Prof. Srinivas Krishnaswamy, HOD on 0832-2580308 or srinivas@goa.bits-pilani.ac.in