BITS PILANI, DUBAI CAMPUS
INSTRUCTION DIVISION
First Semester   2011 – 2012
Course Handout (Part – II)

Date: 01-02-2012

In addition to Part I (General Handout for all courses appended to the Time Table) this portion further specific details regarding the course.

Course No.   **: EEE F111   (3 0 3)**
Course Title   **: Electrical Sciences**
Course Instructors   **: Dr. Jagadish Nayak, Dr.Karthiyayini, Dr.Kavita. S.Jerath**
Instructor-in-charge   **: Dr. Jagadish Nayak**

Scope and Objective of the Course:

The objective of this course is to teach basic techniques of circuit analysis, electronic devices & their applications and digital electronics. A clear under standing of the topics covered in this course will be of great help in grasping the electrical and electronic engineering courses.
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Course Pre/Co- requisite (if any) **& Catalogue / Bulletin Description:** *Given in the Catalogue 2011 – 2012 CD*

Text book [TB]:

Bobrow, Leonard S., Fundamentals of Electrical Engineering, Oxford University Press, Second Edition, 1996

Reference book(s) [RB]:

(i) B. L. Theraja, Electrical Technology, Vol. I & II , S. Chand & Co. Ltd., India , 2001.
(ii) Edward Hughes, Hughes Electrical and Electronic Technology, Pearson Prentice Hall 2005, Ninth edition.
(iii) Smarajit Ghosh, Fundamentals of Electrical and Electronics Engineering, Prentice -Hall of India, 2003.

Course Plan / Schedule:

Sl.#	Learning objectives	Topics to be covered	Chapter No [TB]	No. of lectures
1	To study basic circuit elements and the laws	Passive circuit elements, Voltage and current sources, resistors and ohm's law, KCL, KVL, Independent and Dependent sources	1.1-1.4	3
2	To study circuit analysis techniques	Nodal and Mesh analysis	2.1, 2.3	3
3	To study various theorems	Thevenin's, Norton and Maximum Power transfer theorem	2.5, 2.6	4
4	To study the circuits having energy storing elements	V-I relationship of inductors and capacitors, Energy stored in these elements	3.1, 3.2	1
5	To study response of circuits having energy storing elements	Response of First- Order circuits	3.3, 3.4	3
6	To study response of circuits having energy storing elements	Response of Second - Order circuits	3.5	3
7	Concepts of three phase circuits	Star Delta connections, power circuits analysis	4.6,4.7	4
8	Concept and importance of magnetic circuits	Magnetic circuit, magnetic fields and operation.	14.1,14.2	3
9	Transformer- basic features and modeling	Types, ideal and non-ideal transformer, core loss, circuit model ,calculation, voltage regulation, efficiency	14.3-14.5	4
10	Principle and working of DC and AC machines	Constructional features, emf and torque, circuit model, and magnetization characteristics	15.4-15.5	3
11	To study basics of semi conductors	PN junction, Characters of diode, Diode circuits , Zener Diodes	6.1-6.6	3
12	To study the construction and operation of Bi-polar Junction Transistor	Basic operation and Characteristics of NPN and PNP transistor, Operations of BJT	7.1-7.3	2

13	To study the construction and operation of FET	Basic operation and Characteristics of JFET and MOSFET.	8.1, 8.2	2
14	To study the application of BJT models in amplifier circuits	Common Emitter, Collector and Base configuration	9.1 (part)	2
15	To study the application of FET models in amplifier circuits	Biasing the FET	9.2 (part)	1
16	Introduction to Operational Amplifiers	OPAMP symbol, operation and applications	2.4	2
17	To study basics of Digital circuits	Logic gates, Boolean Algebra, Half and Full adder	11.3-11.5	2
			Total no. of classes planned	45

Evaluation scheme:

EC N0	Evaluation Components	Nature of Component	Duration	Weightage %	Date & Time	Venue
1	Test-1	Closed Book	50 minutes	25	01-04-2012 (Su)	To be announced later
2	Quiz-1	Closed book	20 minutes	8	07-03-2012 (W)	
3	Test – 2	Open book*	50 minutes	20	20-05-2012 (Su)	
4	Quiz – 2 / Assignment	Closed book	20 minutes	7	25-04-2012 (W)	
5	Compre Exam	Closed Book	3 hours	40	14-06-2012 (Th) FN	

* Only prescribed text book(s) and hand written notes are permitted

General Instructions, Attendance & Make-up Policies, etc: *Please refer the Time Table*

Timings for chamber consultation:

Students should contact the Course Instructor in his / her chamber during the CCH for consultation.
Dr. Jagadish Nayak (JNK) Wednesday 6th Class period (12.05 to 12.55 PM)
Dr. S. Karthiyayini, (SKY) Wednesday 6th Class period (12.05 to 12.55 PM)
Dr.Kavita.S.Jerath, (KJH) Tuesday 5th Class period (11.10 to 12.00 AM)

Notices:

All notices will be displayed on the 1st year Notice Board.

Dr. Jagadish Nayak
Instructor – In- Charge

Instructors' Contact Details:

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Dr.Kavita.S.Jerath, Associate Professor, Main block, Chamber no: 144, Contact tel no: 0501563324, Ext no: 234, email: kavita@bits-dubai.ac.ae