NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTLINE TEMPLATE			
Course Title	Basics of Electrical and Electronics Engineering		
Course Code	EEIR 11 (for I[st] year MME department)	**No. of Credits**	02
Department	Electrical and Electronics Engineering	**Faculty**	Mr. Karthik Thirumala
Pre-requisite Course	- - -		
Course Coordinator	**Dr. S. Sudha**		
E-mail	thirumala@nitt.edu	**Telephone No.**	9848626021
Course Type	✓ **Core course**	☐ **Elective course**	☐ **Laboratory course**

COURSE OVERVIEW

Electrical and Electronics Engineering is one of the prime and important engineering streams. In this course students get exposure to the fundamentals of electric and electronic devices and circuits. Students will be taught about the principle of operation of several electrical machines and their applications in the real power system. Students will understand the house wiring and electrical safety techniques and have an opportunity to make a practical attempt on house wiring. Further they will be exposed to basics of analog and digital electronic devices, circuits and simple applications.

COURSE OBJECTIVES

The course aims to equip the students with a basic understanding of Electrical circuits and machines for specific types of applications. The course gives a comprehensive exposure to house wiring. This course also equips student with an ability to understand basics of analog and digital electronics.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
The students shall develop an intuitive understanding of the circuit analysis, basic concepts of electrical machines, house wiring and basics of electronics and be able to apply them in practical situation.	- -

COURSE TEACHING AND LEARNING ACTIVITIES			
S. No.	**Week**	**Topic**	**Mode of Delivery**
1.	7th and 9th of August (2 hours)	Basics of DC circuits and circuit elements	PPT
2.	16th of August (1 hour)	Kirchhoff's law and introduction to AC circuits and elements	PPT
3.	21st and 23rd of August (2 hours)	Phasor diagrams, impedance, power factor and analysis of AC circuits	PPT or Chalk & Talk
4.	28th of August (1 hour)	Numerical solving	Tutorial
5.	30th of August and 4th, 6th of September (3 hours)	Construction, principle of operation, types and application of DC motor and Induction motor	PPT
6.	11th and 13th September (2 hours)	Construction, principle of operation, types and application of synchronous motor and generator	PPT
7.	18th September (1 hour)	Construction, principle of operation, types and application of Transformer	PPT or Chalk & Talk
8.	20th September (1 hour)	Numerical solving	Tutorial
9.	25th & 27th September and 4th & 9th October (4 hours)	House wiring – important tools and components, types of wiring & safety measures. Single phase and three phase systems	PPT
10.	11th, 16th and 23rd October (3 hours)	Introduction to analog electronics, semiconductor devices, types of diodes	PPT or Chalk & Talk
11.	25th and 30th October (2 hours)	Operation and application of Operational amplifiers and introduction to UPS	PPT or Chalk & Talk
12.	1st November (1 hour)	Numerical solving	Tutorial
13.	6th and 8th November (2 hour)	Introduction to digital electronics and number systems	PPT
14.	13th and 15th November (2 hours)	Boolean laws and reduction of Boolean expressions	PPT or Chalk & Talk

15.	20th November (1 hour)	Implementation with logic gates	PPT or Chalk & Talk
16.	22nd November (1 hour)	Numerical solving	Tutorial

COURSE ASSESSMENT METHODS

S. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	First cycle test (1st and 2nd units)	5th week of September	1 hour	20%
2.	Second cycle test (3rd and 4th units)	2nd week of November	1 hour	20 %
3.	Take home or assigenment	4th week of August to 4th week of November	-	10%
4.	Compensation test (First four units)	4th to 9th December	1 hour	20%
5.	End Semester Examination	11th to 22nd December	3 hours	50%

Note:

1. Attending all the assessments (1, 2, 3 and 5) are mandatory for every student.
2. If any student fails to attend the 1st ~~and~~ or 2nd cycle test due to genuine reason, student is permitted to attend the compensation test with 20 % weightage.
3. In any case, compensation test is not considered as an improvement test.

ESSENTIAL READINGS : Textbooks, reference books, Website addresses, journals, etc

1) Hughes revised by Mckenzie Smith with John Hilcy and Keith Brown, "Electrical and Electronics Technology", 8th Edition, Pearson, 2012.
2) P. S. Dhogal, "Basic Electrical Engineering – Vol. I & II," 42nd Reprint, Mc Graw Hill, 2012.
3) A.E. Fitzgerald, D. E. Higginbotham, A. Grabel, "Basic Electrical Engineering", 5th Edition, McGraw-Hill, 1985.
4) A. P. Malvino, D. P. Leach and Gowtham Sha, "Digital Principles and Applications," 6th Edition, Tata Mc Graw Hill, 2007.
5) Vincent Del Toro, "Electrical Engineering Fundamental", Prentice Hall India, 2012.

COURSE EXIT SURVEY

Shall be obtained at the end of the course or semester

COURSE POLICY

1. All the students are expected to attend all the contact hours. Students should maintain 75% minimum physical attendance by the end of the semester to attend the end semester examination.
2. Any student who fails to maintain 75 % attendance needs to appear for the compensation test. Only students who score more than 50 % marks in the compensation test will be eligible for attending the end semester examination.
3. Students not having 75 % minimum attendance at the end of the semester and also scores less than 50 % in the compensation test will have to REDO the course.
4. The minimum marks for passing this course and grading pattern will adhere to the regulations of the institute.
5. In case of any student found guilty indulging in any mal practice, the student will be awarded no marks in that particular assessment. If found using mobile phones or any other gadgets for any mal-practice during the final examination, the answer sheet of the student will not be evaluated and will be awarded ZERO marks.

ADDITIONAL COURSE INFORMATION

1. The Faculty is available for consultation during the time intimated to the students then and there.
2. All correspondence will be sent to the webmail id of the students alone if required.
3. The students will be communicated through the email id: thirumala@nitt.edu for any academic related issues (including sharing of study materials) with respect to this course.

FOR SENATE'S CONSIDERATION

29/8/17

[Mr. Karthik Thirumala, TF/EEE]
Course Faculty

Course Coordinator

30/08/2017

HoD (Dept. of EEE)