DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI

Course Plan Part - I			
Course Title	Basics of Electrical and Electronics Engineering		
Course Code	EEIR 11	**No. of Credits**	2
Course Code of Pre-requisite subject(s)	-		
Session	August 2018	**Sections (if applicable)**	Section "A"
Name of Faculty	Dr. Josephine.R.L	**Department**	Production Engineering
E-mail	josephinerl@nitt.edu	**Telephone No.**	+91 9750541213
Name of Course Coordinator (s) (if applicable)	- -		
E-mail	- -	**Telephone No.**	- -
Course Type	✓ **Core course** ☐ **Elective course** ☐ **Laboratory course**		

SYLLABUS (approved in BoS)

DC & AC Circuits: Current, voltage, power, Kirchhoff's Laws - circuit elements R, L and C, phasor diagram, impedance, real and reactive power in single phase circuits.

DC & AC Machines: DC Motor, Induction motor, Synchronous motor, Synchronous generator and Transformers- construction, principle of operation, types and applications.

House wiring & safety: Single phase and three phase system – phase, neutral and earth, basic house wring - tools and components, different types of wiring – staircase, florescent lamp and ceiling fan, basic safety measures at home and industry.

Analog Electronics: semiconductor devices – p-n junction diode, Zener diode, BJT, operational amplifier – principle of operation and applications – Introduction to UPS.

Digital Electronics: Introduction to numbers systems, basic Boolean laws, reduction of Boolean expressions and implementation with logic gates.

Text Books

1. Hughes revised by Mckenzie Smith with John Hilcy and Keith Brown, 'Electrical and Electronics Technology', 8th Edition, Pearson, 2012.

Reference Books

1. R.J. Smith, R.C. Dorf, 'Circuits Devices and Systems', 5th Edition, John Wiley and sons, 2001.

2. P. S. Dhogal, ' Basic Electrical Engineering – Vol. I & II', 42nd Reprint, Mc Graw Hill, 2012.

3. Malvino, A. P., Leach D. P. and Gowtham Sha, 'Digital Principles and Applications', 6th Edition, Tata Mc Graw Hill, 2007.

4. Vincent Del Toro, 'Electrical Engineering Fundamental', Prentice Hall India, 2002.

COURSE OBJECTIVES

This 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 students 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 Plan – Part II

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 TEACHING AND LEARNING ACTIVITIES

S. No.	Week/ Contact Hour	Topic	Mode of Delivery
1.	II week of August ($14^{th} - 17^{th}$) 1 hr	DC & AC Circuits: Current, voltage, power	*Lecture and PPT*

2.	III week of August ($21^{st} - 24^{th}$) 1 hr	Kirchhoff's Laws	*Chalk and Talk or PPT*
3.	IV week of August ($27^{th} - 31^{st}$) 2 hrs	Circuit elements R, L and C, phasor diagram, impedance	*Chalk and Talk or PPT*
4.	I week of September ($4^{th} - 7^{th}$) 2 hrs	Real and reactive power in single phase circuits.	*Chalk and Talk or PPT*
5.	II week of September ($11^{th} - 12^{th}$) 1 hr	DC & AC Machines: DC Motor	*Chalk and Talk or PPT*
6.	III week of September ($17^{th} - 20^{th}$) 2 hrs	Induction motor, Synchronous motor	*Chalk and Talk or PPT*
7.	IV week of September ($24^{th} - 28^{th}$) 2 hrs	Synchronous generator and Transformers-construction, principle of operation, types and applications	*Chalk and Talk or PPT*
8.	I week of October ($1^{st} - 5^{th}$) 1 hr	House wiring & safety: Single phase system	*Chalk and Talk or PPT*
9.	II week of October ($8^{th} - 12^{th}$) 2 hrs	three phase system – phase, neutral and earth, basic house wring - tools and components	*Chalk and Talk or PPT and Discussion*
10.	III week of October ($15^{th} - 18^{th}$) 2 hrs	Different types of wiring – staircase, florescent lamp and ceiling fan, basic safety measures at home and industry	*Chalk and Talk or PPT*
11.	IV week of October ($22^{nd} - 26^{th}$) 1 hr	Analog Electronics: semiconductor devices-p-n junction diode	*Chalk and Talk or PPT*
12.	V week of October ($27^{th} - 31^{st}$) 2 hrs	Zener diode, BJT,	*Chalk and Talk or PPT*
13.	I week of November ($5^{th} - 9^{th}$) 1 hr	operational amplifier – principle of operation and applications, Introduction to UPS	*Chalk and Talk or PPT*
14.	II week of November ($12^{th} - 16^{th}$) 2 hrs	Digital Electronics: Introduction to numbers systems, basic Boolean laws	*Chalk and Talk or PPT*
15.	III week of November ($19^{th} - 22^{nd}$) 2 hrs	reduction of Boolean expressions	*Chalk and Talk or PPT*
16.	IV week of November ($26^{th} - 30^{th}$) 2 hrs	Implementation with logic gates	*Chalk and Talk or PPT*

COURSE ASSESSMENT METHODS

S. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Assessment – I (First cycle test) (Module I and II)	1st – 5th October	1 hour	25%
2.	Assessment – II (Second cycle test) (Module III and IV)	5th – 9th November	1 hour	25%
3.	Assignment	-	-	10%
CPA	Compensation test (First four modules)	1st – 7th December	1 hour	25%
4.	End Semester Exam (All five modules)	10th – 22nd November	3 hours	40%

COURSE EXIT SURVEY

1. Students' feedback through class committee meetings
2. Feedback questionnaire from students – twice during the semester
3. Feedback from students on Course Outcomes at the end of the semester

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

Attendance

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 and score more than 50 % marks to be eligible for attending the end semester examination. 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.

Compensation Assessment

3. Attending all the assessments (1 - 4) are mandatory for every student. Flexibility is given to the students to fix the date for each mode of evaluation convenient to majority of the students. If any student fails to attend the cycle tests due to genuine reason like medical emergency, the student may be permitted to appear the compensation test on submission of appropriate documents as proof. In any case, compensation test is not considered as an improvement test.

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 examination, the answer sheet of the student will not be evaluated and will be awarded ZERO marks.

ADDITIONAL 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: josephinerl@nitt.edu for any academic related issues (including sharing of study materials) with respect to this course.

FOR APPROVAL

Course Faculty	CC-Chairpersons	HoD, Dept. of EEE