NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Department of Electrical and Electronics Engineering

COURSE OUTLINE (PART-I)			
Course Title	**Circuits and Digital Laboratory**		
Course Code	**EELR10**	**No. of Credits**	**2**
Session	**August 2023**	**Section**	**A**
Faculty	**Dr. S. Mageshwari**	**Department**	**EEE**
Office Email	**mageshwari@nitt.edu**	**Telephone No**	**04312503260**
Pre-requisites Course Code	**EEPC10 Circuit Theory**		
Name of Course Coordinator	**Dr. S. Mageshwari**		
Course Type	☑ **Core course** ☐ **Elective course**		

Syllabus

List of Experiments:

- Characteristics of CB and CE configuration of BJT.
- Verification of Thevenin and Maximum Power Transfer Theorem.
- Verification of Superposition Theorem.
- Verification of Kirchhoff's Current and Voltage law.
- Transient characteristics of R-L series circuit.
- Transient characteristics of R-C series circuit.
- Transient characteristics of R-L-C series circuit.
- Design of Multiplexer and Demultiplexer, encoder and decoder
- Design of magnitude comparator
- Design of 4 bit priority encoder
- Design of synchronous sequential logic circuits
- Design of asynchronous sequential logic circuits
- Mini Project

COURSE OBJECTIVES

- To understand and analyze the basic theorems of Circuit theory
- Understand and analyze series & parallel circuits and measurement of single and three-phase power.
- Understand and analyze different applications of diode and characteristics of Transistor.
- Understand the basics of digital design

COURSE OUTCOMES (CO)

Upon completion of the course the students will be able to

1. Verify the network theorems and operation of electrical and electronic circuits.
2. Choose the appropriate equipment's for measuring the electrical quantities and verify the same for different circuits.
3. Prepare the technical report on the experiments carried out.
4. Design basic digital logic circuits

Mapping of Programme outcomes with Course outcomes:												
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	2	2	3	3	3	2	3
CO2	3	2	3	3	3	2	2	3	3	3	2	3
CO3	3	2	3	3	2	2	2	3	3	3	3	3
CO4	3	2	3	3	3	2	2	3	3	3	2	3

COURSE PLAN (PART-II)			
COURSE OVERVIEW			
This course aims to provide practical and hands-on experience in the implementation of electric, analog and digital circuits.			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	**Week**	**Topic**	**Mode of Delivery**
1.	**Week 1**	Demonstration and use of Bread board, Variable regulated power supply, Function generator, Digital Storage Oscilloscope, Multi meters, etc.	Laboratory demonstration
2.	**Week 2**	Verification of Kirchhoff's Current and Voltage law.	Conducting experiment in the Laboratory
3.	**Week 3**	Verification of Thevenin and Maximum Power Transfer Theorem.	
4.	**Week 4**	Verification of Superposition Theorem	
5.	**Week 5**	• Transient characteristics of RL series circuit. • Transient characteristics of RC series circuit. • Transient characteristics of RLC series circuit.	
7.	**Week 6**	Design of Multiplexer and De Multiplexer, Encoder and decoder	Conducting experiment in the Laboratory
8.	**Week 7**	Design of Magnitude Comparator	
9.	**Week 8**	Design of 4-bit Priority encoder	
10.	**Week 9**	Characteristics of CB configuration of BJT	
11.	**Week 10**	Characteristics of CE configuration of BJT	
12.	**Week 11**	Design of Mod-n Counter	
13.	**Week 12**	Design of 3-bit up/down counter	
14.	**Week 13**	Design of 3-bit Asynchronous counter	
15.	**Week 14**	Mini-Project	

COURSE ASSESSMENT METHODS				
S.No.	**Mode of Assessment**	**Week/Date**	**Duration**	**% Weightage**
1.	Internal assessment (Observation+Report)	During regular laboratory classes	3 hours in each lab class	40 %
2.	Mid Sem Test 1	Week 6	1 hour	15 %
3.	Mid Sem Test 2	Week 11	1 hour	15 %
4.	Final Assessment	Week 15	**3 hours**	30%

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

1. Text / references mentioned in EEPC10 Circuit Theory course.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

- Feedback from the students during class committee meetings
- Anonymous feedback through questionnaire

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

ATTENDANCE

1. Every student should maintain minimum 75% physical attendance. Students not meeting these criteria will have to RE DO the course.

2. Students who have missed the regular lab class should get the prior permission for attending compensation lab class.

ACADEMIC HONESTY & PLAGIARISM

1. Possessing of mobile phones, carrying bits of paper, talking to other students and copying assessment from others is considered as dishonesty.
2. Zero marks will be awarded to offenders for copying the simulations and for the one who shared the simulations.
3. Preventing or hampering other students from pursuing their academic activities is also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD for necessary action.

ADDITIONAL COURSE INFORMATION

CORRESPONDENCE

1. All the students are advised to check their NITT WEBMAIL regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information regarding this course) will be done through their webmail.
2. Queries (if required) may be emailed to mageshwari@nitt.edu / contact me during the lab sessions for any clarifications.

FOR SENATE'S CONSIDERATION

Course Faculty S. Magesh **CC-Chairperson** 3/8/23 **HOD** 03/08/23