Programme: B. Tech. (ECE)	Course Title: Basic Electronics Lab		Course Code: ECE106
Type of Course: Institute Core	Prerequisites: None		Total Contact Hours: 30
Year/Semester: 1/Odd	Lecture Hrs/Week: 0	Tutorial Hrs/Week: 0	Practical Hrs/Week: 3	Credits: 2

Learning Objective:

The objective of the course is that the students would appreciate the significance of signal processing in different applications. Understand and apply different Network analysis theorems to analyze and design the circuits. They would be able to apply the theoretical knowledge in practical lab experiments and verify the hypotheses. They would be able to analyze time and frequency domain characteristics of system, compile the different building blocks in digital electronics using logic gates and implement simple logic function using basic universal gates.

Course outcomes (COs):

On completion of this course, the students will have the ability to:		Bloom's Level
CO-1	**Recognize** basics electronic circuits, **understand** and **apply** network theorems in an electrical circuit	1, 2, 3
CO-2	**Perform** time and frequency domain **analysis** of RLC circuits.	3, 4
CO-3	**Understand** and **analyze** basic amplifier configurations using IC741.	2,4
CO-4	**Design** basic analog filter circuits using IC741.	6
CO-5	**Recognize** and **understand** different logic and universal gates.	1, 2
CO-6	**Design** basic combinational and sequential circuits.	6

Course Topics	Lab sessions	Hours
UNIT – I (Networks)	3	
1.1 To analyze and design a resistive network	1	
1.2 To analyze and study the time response of RC and RL circuits	1	9
1.3 To analyze and study the frequency response of RC and RL circuit	1	
UNIT – II (Operational Amplifiers)	3	
2.1 To design and analyze inverting and non-inverting mode amplifier using Operational amplifier (IC741).	1	9
2.2 To analyze and design adder and scaling amplifier using IC741.	1	
2.3 To analyze and design a band pass circuit.	1	
UNIT – III (Digital Circuits)	3	9

3.1 To study and analyze the basic logic gate and universal gate	**1**	
3.2 To analyze and design digital circuits used for performing basic arithmetic operation as addition and subtraction	**1**	
3.3 To analyze and design Sequential Circuits (Flip Flops and latches).	**1**	

Textbook References:

Text Books:

1. *Microelectronic Circuits,* Sedra and Smith, Oxford University Press.
2. *Linear Circuits Analysis and Synthesis,* A. Ramkalyan, Oxford University Press, 2005.
3. *Basic Circuit Analysis*, D. R. Cunningham and J. A. Stuller, Jaico Publishing House, Mumbai, 1996.

Reference books:

1. *Digital Integrated Electronics*, Herbert Taub and Donald Schilling, McGraw Hill, New York, 1977.

Additional Resources:

1. *http://www.nptel.ac.in/courses/Webcourse-contents/IIT-ROORKEE/BASIC-ELECTRONICS/home_page.htm*
2. *http://nptel.ac.in/video.php?subjectId=117103063*

Evaluation Method*	
Item	**Weightage (%)**
Quizzes	45
Lab report	10
Final Examination	45

*Please note, as per the existing institute's attendance policy the student should have a minimum of 75% attendance. Students who fail to attend a minimum of 75% lectures will be debarred from the End Term/Final/Comprehensive examination.

CO and PO Correlation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1		3				2	1		3	3	1	
CO2	3	3	1		3				2	1		3	3	1	
CO3	3	2	1		3				2	1		3	3	1	
CO4	3	3	3	2	3				2	1		3	3	2	2
CO5	3	3	1		3				2	1		3	3	1	
CO6	3	3	3	2	3				2	1		3	3	2	2

Last Updated On: 24th November 2020

Updated By: Dr. Gaurav Chatterjee

Approved By: