Program : **Diploma in Electronics/ Electronics and Communication Engineering**	
Course Code : **3046**	Course Title: **Principles of Electronic Communication lab**
Semester : **3**	Credits: **1.5**
Course Category: **Program Core**	
Periods per week: **3 (L:0, T:0, P:3)**	Periods per semester: **45**

Course Objectives:

- To give hands on experience and learn various electronic components, analogue modulation circuits, pulse modulation circuits.
- To demonstrate the working of various stages of FM and solve the problems associated with it.
- To guide in developing an FM receiver of high fidelity.

Course Prerequisites:

Topic	Course code	Course name	Semester
Testing of active and passive components, familiarization of equipments		Fundamentals of Electrical and Electronics Engineering lab	2
Operation of transistor, diode		Basic Electronics	2

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive level
CO1	Illustrate the working of electronic components in communication system	3	Understanding
CO2	Experiment with analog modulation schemes	12	Applying
CO3	Develop Pulse modulation circuits	9	Applying

CO4	Build different stages in AM and FM	15	Applying
	Lab Exam	6	

CO – PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	3						
CO3	3						
CO4	3	3	3	3			

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Illustrate the working of electronic components in communication system**		
M1.01	Familiarize 555, 565, LM 380, Counter IC 7490.	3	Understanding
CO2	**Experiment with analog modulation schemes.**		
M2.01	Construct an AM generator using transistor and measure the modulation index	3	Applying
M2.02	Construct AM demodulator using diode and observe the input-output waveforms	3	Applying
M2.03	Build an FM generator using 555 IC and observe the input-output waveforms.	3	Applying
M2.04	Build an FM generator and demodulator using 565 IC and observe the input-output waveforms	3	Applying
	Lab Exam – I	3	
CO3	**Develop Pulse modulation circuits**		
M3.01	Develop a PAM modulator and demodulator circuit. Observe the input-output waveforms	3	Applying
M3.02	Develop a PWM modulator using 555 IC and observe the input-output waveforms	3	Applying
M3.03	Develop a PPM modulator circuit using 555 and observe the input-output waveforms	3	Applying

CO4	**Build different stages in AM and FM.**		
M4.01	Build pre-emphasis and de-emphasis circuits and plot its characteristics	3	Applying
M4.02	Construct a frequency multiplier circuit using IC 565 to multiply the input frequency by a factor N.	3	Applying
M4.03	Build a mixer circuit using discrete components and observe the waveforms	3	Applying
M4.04	Build an audio power amplifier circuit	3	Applying
	Open ended experiment (Setup an FM receiver in the range 80MHz-108MHz)	3	Applying
	Lab Exam – II	3	

**** - Suggested Open Ended Projects**

(Not for End Semester Examination but compulsory to be included in Continuous Internal Evaluation. Students can do open ended experiments as a group of 3-5. There should be no duplication in experiments between groups. This is mainly for the purpose of continuous internal evaluation. Students should prepare a separate report on open ended experiment of their choice.)

Setup an FM receiver in the range 80MHz-108MHz

Text / Reference:

T/R	Book Title/Author
T1	Electronic Communication Systems – George Kennedy – TMH
R1	Electronic communications - Roddy and Coolen – PHI

Online Resources:

Sl.No	Website Link
1	https://nptel.ac.in/courses/117/105/117105143

Sample Questions to Test Outcomes

1. Make use of a circuit to generate an AM wave and calculate its modulation index.
2. Develop a circuit to change the width of a pulse continuously.