

Communication Laboratory		Semester	4
Course Code	BECL404	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2	SEE Marks	50
Credits	01	Exam Hours	03
Examination type (SEE)	Theory/ Practical /Viva-Voice /Term-work/Others		
Course objectives: This laboratory course enables students to <ul style="list-style-type: none"> Understand the basic concepts of AM and FM modulation and demodulation. Design and analyse the electronic circuits used for AM and FM modulation and demodulation circuits. Understand the sampling theory and design circuits which enable sampling and reconstruction of analog signals. Design electronic circuits to perform pulse amplitude modulation, pulse position modulation and pulse width modulation. 			
Experiments (Experiments to be conducted using hardware components)			
1	Design and test a high-level collector Modulator circuit and Demodulation the signal using diode detector.		
2	Test the Balanced Modulator / Lattice Modulator (Diode ring)		
3	Design a Frequency modulator using VCO and FM demodulator using PLL (Use IC566 and IC565).		
4	Design and plot the frequency response of Preemphasis and Deemphasis Circuits		
5	Design and test BJT/FET Mixer		
6	Design and test Pulse sampling, flat top sampling and reconstruction		
7	Design and test Pulse amplitude modulation and demodulation.		
8	Generation and Detection of Pulse position Modulation		
9	Generation and Detection of Pulse Width Modulation		
10	PLL Frequency Synthesizer		
11	Data formatting and Line Code Generation		
12	PCM Multiplexer and Demultiplexer		
Course outcomes (Course Skill Set): At the end of the course the student will be able to: <ol style="list-style-type: none"> Illustrate the AM generation and detection using suitable electronic circuits. Design of FM circuits for modulation, demodulation and noise suppression. Design and test the sampling, Multiplexing and pulse modulation techniques using electronic hardware. Design and Demonstrate the electronic circuits used for RF transmitters and receivers. 			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE):

CIE marks for the practical course are **50 Marks**.

The split-up of CIE marks for record/ journal and test are in the ratio **60:40**.

- Each experiment is to be evaluated for conduction with an observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments are designed by the faculty who is handling the laboratory session and are made known to students at the beginning of the practical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students are scaled down to **30 marks** (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct a test of 100 marks after the completion of all the experiments listed in the syllabus.
- In a test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability.
- The marks scored shall be scaled down to **20 marks** (40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and marks of a test is the total CIE marks scored by the student.

Semester End Evaluation (SEE):

- SEE marks for the practical course are 50 Marks.
- **SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the Head of the Institute.**
- The examination schedule and names of examiners are informed to the university before the conduction of the examination. These practical examinations are to be conducted between the schedule mentioned in the academic calendar of the University.
- All laboratory experiments are to be included for practical examination.
- (Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.
- Students can pick one question (experiment) from the questions lot prepared by the examiners jointly.
- Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.

General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)

Change of experiment is allowed only once and 15% of Marks allotted to the procedure part are to be made zero.

The minimum duration of SEE is 02 hours

Suggested Learning Resources:

1. Louis E Frenzel, Principles of Electronic Communication Systems, 3rd Edition, Mc Graw Hill Education (India) Private Limited, 2016. ISBN: 978-0-07-066755-6.



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