Department of Computer Science and Engineering
Varendra University
Course outline for CSE 3107

1	Course Code:	CSE 3107
2	Course Title	Communication Engineering
3	Course Type	Theory
4	Year and Semester	3rd year 1st semester, Section-C
5	Academic Session	Spring 2026
6	Course Teacher	Arifa Ferdousi
7	Pre-Requisite	
8	Credit Value	3 Credit
9	Contact Hour	3 hours
10	Total Marks	100
11	Rationale of the Course	This course contains the basics of analogue communication and digital communication, optical fiber communication, satellite communication and cellular communication, 5G technologies. After finishing this course students will be able to understand the current trends of communication technologies and will be able to implement the knowledge for further research purposes.

12 Course Objectives

COs	Description	Taxonomy domain/level	POs	WK	WP	EA	Teaching-Learning strategy	Assessment strategy
CO1	Describe the necessary terminologies of Communication Engineering.	Cognitive/ Understand	1	3			Lecture/Slides	Mid-Term
CO2	Analyze the analog and the digital modulation techniques.	Cognitive/ Analyze	2	4			Lecture/Slides	Class Test
CO3	Explain Satellite and Optical Fiber Communication	Cognitive/ Understand	1	3			Lecture/Slides	Final Exam

13. Mapping of Course Learning Outcome (CLO) with Program Learning Outcome (PLO)

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO 1	√											
CLO 2		√										
CLO 3	√											

Course plan

Week	Topic	Teaching Learning Strategy	Assessment Strategy	Corresponding CLOs
1	Communication Engineering Fundamentals, Waveforms Spectra, Elements of basic communication systems, Periodic and nonperiodic waveforms and their properties. Fourier series, Noise and its different types.	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	1
2	Analogue Communication: Amplitude modulation, Amplitude modulation index, Frequency spectrum for sinusoidal AM.	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
3	Frequency Modulation: Frequency Modulation, Sinusoidal FM, Frequency spectrum for Sinusoidal FM, Phase Modulation.	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
CT/Quiz				
4	Pulse Code Modulation (PCM), Quantization, Compression, PCM Receiver, Differential PCM	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
5	Delta Modulation, Sigma-Delta A/D conversion. Pulse Modulation	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
CT/QUIZ				
6	Analog Multiplexing	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
Mid-Term Exam				
7	Digital Communication: Basic Digital Communication System, Synchronization, Asynchronous Transmission, Probability of Bit Error in Baseband Transmission, Matched Filter, Eye Diagrams	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
8	Digital Carrier Systems, Amplitude Shift keying, Frequency Shift Keying, Phase Shift Keying	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
CT/QUIZ				
9	Carrier Recovery Circuits Quadrature Phase Shift Keying,	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
10	Error Control Coding, Block Control, Repetition Encoding, Parity Encoding,	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
11	Convolution Encoding. Digital Multiplexing.	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	2
12	Satellite Communication, Kepler's First and Second Law, Orbits, Geostationary Orbits	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	3
CT/QUIZ				

13	Power System. 5G technologies. Fiber Optic Communication, Propagation within a Fiber,	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	3
14	Modes of Propagation, Losses in Fibers, Light sources for Fiber optics, Photo detectors.	Class Lectures, multimedia slides, interactive discussion	Feedback quiz, Class Test, Assignments	3
Review Classes				
Final Exam				

Week	Topic	Reading Materials
1	Communication Engineering Fundamentals, Waveforms Spectra, Elements of basic communication systems, Periodic and nonperiodic waveforms and their properties. Fourier series	• Data Communications and Networking by Behrouz A. Forouzan, Chapter-3 • Lecture Slides
	Noise and its different types.	• Lecture Slides • Electronic Communication Systems by George Kennedy, Chapter-2
2	Analogue Communication: Amplitude modulation, Amplitude modulation index, Frequency spectrum for sinusoidal AM.	• Lecture Slides • Electronic Communication Systems by George Kennedy, Chapter-2
3	Frequency Modulation: Frequency Modulation, Sinusoidal FM, Frequency spectrum for Sinusoidal FM, Phase Modulation.	• Class Lecture • Lecture Slides • Electronic Communication Systems by George Kennedy, Chapter-4
4	Pulse Code Modulation (PCM), Quantization, Compression, PCM Receiver, Differential PCM	• Data Communications and Networking by Behrouz A. Forouzan, Chapter-4, Article - 4.2 • Lecture Slides • Electronic Communication Systems by George Kennedy, Article-5.3.3
5	Delta Modulation, Sigma-Delta A/D conversion. Pulse Modulation	• Data Communications and Networking by Behrouz A. Forouzan, Chapter-4, Article - 4.2.2 • Lecture Slides
6	Analog Multiplexing	• Data Communications and Networking by Behrouz A. Forouzan, Article-6.1
7	Digital Communication: Basic Digital Communication System, Synchronization, Asynchronous Transmission, Probability of Bit Error in Baseband Transmission, Matched Filter, Eye Diagrams	• Lecture Slides • Data Communications and Networking by Behrouz A. Forouzan, Chapter-4 • Data Communications and Networking by Behrouz A. Forouzan, Chapter-3
8	Digital Carrier Systems, Amplitude Shift keying, Frequency Shift Keying, Phase Shift Keying	• Data Communications and Networking by Behrouz A. Forouzan, Article-5.1

9	Carrier Recovery Circuits Quadrature Phase Shift Keying,	• Class Lecture • Data Communications and Networking by Behrouz A. Forouzan, Article-5.1
10	Error Control Coding, Block Control, Repetition Encoding, Parity Encoding,	• Class Lecture • Lecture Slides
11	Convolution Encoding. Digital Multiplexing.	• Lecture Slides • Data Communications and Networking by Behrouz A. Forouzan
12	Satellite Communication, Kepler's First and Second Law, Orbits, Geostationary Orbits	• Lecture Slides • Data Communications and Networking by Behrouz A. Forouzan, Chapter-16
13	Power System. 5G technologies. Fiber Optic Communication, Propagation within a Fiber,	• Lecture Slides • Data Communications and Networking by Behrouz A. Forouzan, Chapter-7
14	Modes of Propagation, Losses in Fibers, Light sources for Fiber optics, Photo detectors.	• Lecture Slides • Data Communications and Networking by Behrouz A. Forouzan, Chapter-7