

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE TEMPLATE			
Course Title	ANALOG COMMUNICATION for SECTION A ECE		
Course Code	ECPC21	No. of Credits	3
Department	ECE	Faculty	Dr. N.Gunavathi
Pre-requisites Course Code	ECPC10		
Course Coordinator(s) (if, applicable)			
Other Course Teacher(s)/Tutor(s) E-mail	gunavathi@nitt.edu	Telephone No.	0431 250 3315
Course Type	Programme Core		
COURSE OVERVIEW			
This course brings the basic concepts of analog communication techniques like modulation, the generation and detection of modulated signals and the analog communication system with AWGN.			
COURSE OBJECTIVES			
To develop a fundamental understanding on communication systems with an emphasis on analog modulation techniques and noise performance.			
COURSE OUTCOMES (CO)			
Course Outcomes	Aligned Programme Outcomes (PO)		
1. Understand the basics of communication system and analog modulation techniques	PO1, PO2, PO4,PO12		
2. Apply the basic knowledge of signals and systems and understand the concept of Frequency modulation.	PO1, PO2, PO4,PO12		
3. Apply the basic knowledge of electronic circuits and understand the effect of Noise in communication system and noise performance of AM system	PO1, PO2, PO4,PO12		
4. Understand the effect of noise in FM system.	PO1, PO2, PO4,PO12		
5. Understand the concept of TDM and Pulse Modulation techniques.	PO1, PO2, PO4,PO12		

COURSE TEACHING AND LEARNING ACTIVITIES

S. No.	Week	Topic	Mode of Delivery
1.	1 st	Introduction to communication systems. Basic blocks of communication systems. Modulation. Need for modulation and Categories.	PPT - online
2.	2 nd	Conventional Amplitude modulation. AM frequency spectrum and bandwidth. Power calculation. Method of generation and detection. Limitations of AM	PPT - online
3.	3 rd	Double side band suppressed carrier modulation. Vestigial side band modulation. Frequency spectrum and bandwidth. Methods of generation and detection. Single side band modulation. Multiplexing. VSB-SC	PPT - online
4.	4 th	Frequency division multiplexing system. Superheterodyne AM receiver. Comparison with Tuned radio frequency receiver. Angle modulation. Frequency and Phase modulation.	PPT - online
5	5 th	Scheme for generating FM and PM signals. Narrow band FM signal. Comparison with AM signal. Method of generation of NBFM signal. Wideband FM signal.	PPT - online
6	6 th	Calculation of transmission bandwidth. Carson's rule. Indirect method of generating Wideband FM signal. Direct method for FM signal generation. Demodulation of FM signals. Slope detection.	PPT - online
7	7 th	Balanced discriminator. FM stereo multiplexing. Noise calculation. Channel model. Receiver model. Ideal low pass filtered noise. Ideal band pass filtered noise.	PPT - online

8	8 th	Noise in DSBSC receivers. Noise in AM receivers using envelope detection. Threshold effect.	PPT - online
9	9 th	Noise in FM receivers. FM Threshold effect. Capture effect.	PPT - online
10	10 th	FM threshold reduction. Pre-emphasis and De-emphasis in FM.	PPT - online
11	11 th	Pulse modulation techniques. Process of Sampling. Time division multiplexing Pulse amplitude modulation. Generation and detection.	PPT - online
12	12 th	Pulse width and Pulse position modulation. Method of generation and detection. Noise performance.	PPT - online

COURSE ASSESSMENT METHODS				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	ASSESSMENT I Descriptive Type Examination (2 Units)	1 st week of October/ CCM Common schedule	60 Minutes	20
2	ASSESSMENT II Descriptive Type Examination (2 Units)	4 th week of October/ As per CCM Common schedule	60 minutes	20
3	Compensation Assessment (4 units)	As per Institute Common schedule	60 Minutes	20
4	SEMINAR / ASSIGNMENT/CLASS TEST/PERFORMANCE IN THE CLASS			30
5	END SEMESTER Descriptive Type Examination (Unit 1,2,3,4 & 5)	As per Institute Common schedule	120Minutes	30

Text Books

1. S.Haykins, Communication Systems , Wiley, (4/e), Reprint 2009.
2. Kennedy, Davis, Electronic Communication Systems (4/e), McGraw Hill, Reprint 2008.

Reference Books

1. B.Carlson, Introduction to Communication Systems, McGraw-Hill, (4/e), 2009.
2. J.Smith, Modern Communication Circuits (2/e), McGraw Hill, 1997.
3. J.S.Beasley & G.M.Miler, Modern Electronic Communication (9/e), Prentice-Hall, 2008.

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

1. Direct feedback from the students by having face-to-face meeting individually and as the class as a whole.
- 2.Feedback from the students during the class committee meetings

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

All students are expected to do their work .The taking of information by means of copying homework assignments, or looking or attempting to look at another student's paper during an examination is considered dishonest.

Also preventing or hampering other students from pursuing their academic activities is also considered as academic dishonest.

Any evidence of such academic dishonesty will result in the loss of all marks on that assignment or exam.

- Students opting for plagiarism during exams will be summarily sent out and awarded zero marks for that exam.
- Students honestly producing original work will be rewarded with better marks.
- Students not having 75% minimum attendance at the end of the semester will have to repeat the course. Students who do not maintain 75% attendance between the assessments without any valid reason will be warned the first time and will be stopped from future assessments if they persists in abstaining from classes.

ADDITIONAL COURSE INFORMATION

- Students may fix appointments for detailed discussion by sending email to gunavathi@nitt.edu two days prior to the desired appointments date with the topic to discuss. The students must come prepared for the discussion with through background preparation
- Minor doubts will be clarified after the contact hours without any prior appointment.

FOR SENATE'S CONSIDERATION

Course Faculty Dr. N.Gunavathi

CC-Chairperson

 HOD

(Dr.R.K.Jeyachitra)