

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE TEMPLATE			
Course Title	ANALOG COMMUNICATION for SECTION B ECE		
Course Code	ECPC21	No. of Credits	3
Department	ECE	Faculty	Dr. B.Rebekka
Pre-requisites Course Code	ECPC10		
Course Coordinator(s) (if, applicable)			
Other Course Teacher(s)/Tutor(s) E-mail	rebekka@nitt.edu	Telephone No.	9894478823
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 noise analysis.			
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 performance of FM system.			PO1, PO2, PO4,PO12
5. Understand 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.	Chalk and Talk, PPT
2.	2 nd	Conventional Amplitude modulation. AM frequency spectrum and bandwidth. Power calculation. Method of generation and detection. Limitations of AM	Chalk and Talk, PPT
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.	Chalk and Talk, PPT
4.	4 th	Frequency division multiplexing system. Superheterodyne AM receiver. Comparison with Tuned radio frequency receiver. Angle modulation. Frequency and Phase modulation.	Chalk and Talk, PPT
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.	Chalk and Talk, PPT
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.	Chalk and Talk, PPT
7	7 th	Balanced discriminator. FM stereo multiplexing. Noise calculation. Channel model. Receiver model. Ideal low pass filtered noise. Ideal band pass filtered noise.	Chalk and Talk, PPT

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

COURSE ASSESSMENT METHODS				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
•	ASSESSMENT I Descriptive Type Examination (2 Units)		60 Minutes	20
•	ASSESSMENT II Descriptive Type Examination (2 Units)		60 minutes	20
•	Compensation Assessment		60 Minutes	
•	SEMINAR / ASSIGNMENT			10
•	END SEMESTER Descriptive Type Examination (Unit 1,2,3,4 & 5)		180 Minutes	50

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 rebekka@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. B.Rebekka  CC-Chairperson 

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