Course code	Course Name	L-T-P -Credits	Year of Introduction
EE401	Electronic Communication	3-0-0-3	2016

Prerequisite: Nil

Course Objectives

- To introduce the applications of communication technology.
- To understand the methods and techniques used in communication field.

Syllabus:

AM and FM fundamentals-AM and FM transmitters and receivers-Television and radar systems-Digital communication-Satellite communication-Cellular telephone.

Expected outcome

The students will

i. Understand the need of modulation in transferring a signal through either wireless or wired communication systems
ii. Be able to apply analog modulation techniques and receiver fundamentals in analog communication.
iii. Be to apply baseband digital encoding & decoding techniques in the storage / transmission of digital signal through wired channel
iv. Understand the performance of communication systems in the presence of noise and interference

Text Books:

1. Kennedy G., *Electronic Communication Systems*, McGraw-Hill, New York, 2008.
2. Roody and Coolen, *Electronic Communication*, Prentice Hall of India LTD., New Delhi, 2007.

References:

1. William Scheweber, *Electronic Communication Systems*, Prentice Hall of India LTD, New Delhi, 2004.
2. Wayne Tomasi, *Electronic Communication Systems*, Prentice Hall of India LTD, New Delhi, 2004.
3. Frank R. Dungan, *Electronic Communication Systems*, 3/e, Vikas Publishing House, 2002.
4. Simon Haykins, *Communication Systems*, John Wiley, USA, 2006.
5. Bruce Carlson. *Communication Systems*, Tata McGraw Hill, New Delhi, 2001.
6. Taub and Schilling, *Principles of Communication Systems*, McGraw-Hill, New York, 2008.
7. Anokh Singh, *Principles of Communication Engineering*, S. Chand and Company Ltd., Delhi.

Course Plan

Module	Contents	Hours	Sem. Exam Marks
I	**AM and FM fundamentals** AM – Frequency spectrum – vector representation – power relations – generation of AM – DSB, DSB/SC, SSB, VSB FM – frequency spectrum – power relations	6	15%
II	**AM and FM transmitters and receivers** Block diagrams of low power and high power AM transmission - AM receivers: straight receivers super hetrodyne receiver - choice of intermediate frequency - simple AVC circuit Block diagrams of direct FM transmitter and Armstrong transmitter - FM receivers (balanced - slope detector and Foster-Seely discriminator only).	8	15%
FIRST INTERNAL EXAMINATION			

III	**Television and radar systems** Principles of television engineering - Requirements and standards – need for scanning - types of camera tubes and picture tubes - B/W and colour systems - PAL - CCTV - Cable TV-high definition television. Radar and navigation: principle of radar and radar equation, block schematics of pulsed radar.	8	15%
IV	**Digital communication:** Principles of digital communication – - Sampling process-pulse modulation Techniques- sampling process-PAM, PWM and PPM concepts - PCM encoder and decoder Applications of data communication	6	15%
SECOND INTERNAL EXAMINATION			
V	**Satellite communication** Multiple access (MA) techniques-FDMA, TDMA, CDMA, SDMA - applications in satellite communication wire, MA techniques applications in wired communication. in satellite communication, earth station; Fibers – types: sources, detectors used, digital filters, optical link	8	20%
VI	**Cellular telephone -** Basic concepts, frequency reuse, interference cell splitting, sectoring, cell system layout, cell processing. Fibers – types: sources, detectors used, digital filters, optical link: Bluetooth, Zig-Bee, GPS, Wi-Fi, Wi-Max based communication	6	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN:

Maximum Marks: 100 Exam Duration: 3Hourrs.

Part A: 8 compulsory questions.
One question from each module of Modules I - IV; and two each from Module V & VI.
Student has to answer all questions. (8 x5)=40

Part B: 3 questions uniformly covering Modules I & II. Student has to answer any 2 from the 3 questions: (2 x 10) =20. Each question can have maximum of 4 sub questions (a,b,c,d), if needed.

Part C: 3 questions uniformly covering Modules III & IV. Student has to answer any 2 from the 3 questions: (2 x 10) =20. Each question can have maximum of 4 sub questions (a,b,c,d), if needed.

Part D: 3 questions uniformly covering Modules V & VI. Student has to answer any 2 from the 3 questions: (2 x 10) =20. Each question can have maximum of 4 sub questions (a,b,c,d), if needed.