

**Second year of Five Years integrated M.Sc. (Physics)**

<b>M. Sc - II, Semester IV</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ES 204: (Engg. Science Electives)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>BASICS OF COMMUNICATION SYSTEMS (DEPTT-ECED)</b>				

- **INTRODUCTION TO COMMUNICATION SYSTEMS** (01 Hours)  
Introduction, Elements of a Communication System
- **AMPLITUDE MODULATION** (04 Hours)  
Full-Carrier AM, Time Domain, Frequency Domain, Quadrature AM and AM Stereo, Suppressed-Carrier AM
- **ANGLE MODULATION** (04 Hours)  
Frequency Modulation, Phase Modulation, Angle Modulation Spectrum, FM Stereo
- **TRANSMITTERS AND RECEIVERS** (06 Hours)  
Transmitter Requirements, Full-Carrier AM Transmitters, FM Transmitters, Receiver Topologies, Demodulators
- **DIGITAL COMMUNICATION** (04 Hours)  
Pulse Modulation, Pulse-Code Modulation, Delta Modulation, Line Codes, Time-Division Multiplexing
- **MULTIPLEXING AND MULTIPLE-ACCESS TECHNIQUES** (03 Hours)  
FDM / FDMA, TDM / TDMA, Spread-Spectrum Systems, CDMA
- **RADIO WAVE PROPAGATION** (04 Hours)  
Ground-Wave Propagation, Ionosphere Propagation, Line-of-Sight Propagation, Propagation in a Mobile Portable Environment, Repeaters and Cellular Systems
- **SATELLITE COMMUNICATION** (05 Hours)  
Satellite Orbits, Geostationary Satellites, Applications of Geostationary Satellites, Satellites in Low and Medium Earth Orbits
- **CELLULAR RADIO** (04 Hours)  
AMPS, AMPS Control System, Cellular Telephone Specifications and Operation, Cell Site Equipment, Digital Cellular Systems
- **PERSONAL COMMUNICATION SYSTEMS (PCS)** (05 Hours)  
Differences Between Cellular and PCS Systems, TDMA, GSM, CDMA, Comparison PCS Schemes, Data Communication with PCS, Third Generation PCS Systems
- **FIBER OPTICS** (05 Hours)  
Optical Fiber, Fiber-Optic Cables, Splices and Connectors, Optical Couplers and Switches, Optical Emitters, Optical Detectors, Basic Fiber Optics Systems

(Total Contact Time (Theory) : 45 Hours)

**BOOKS RECOMMENDED:**

1. **Roy B.**, *Electronic Communication Systems*, Thomson Asia, 2<sup>nd</sup> Ed., 2002
2. **Roddy D. and Coolen J.**, *Electronic Communications*, PHI, 4<sup>th</sup> Ed., 1995
3. **Kennedy G.**, *Electronic Communication Systems*, 3<sup>rd</sup> Ed., McGraw-Hill, 1993
4. **Haykin S.**, *Communication Systems*, Wiley Eastern, 2<sup>nd</sup> Ed., 1994
5. **Taub and Schilling**, *Principles Of Communication Systems*, McGraw-Hill, 1992