

5141 – COMMUNICATION SYSTEM (MOBILE) IV										
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)					
Lectures	Practical	Credits			Theory		Practical Ex.		Total	
4	1	5	25	25	3 Hrs	100	50/or		200	
Pre-requisite		Source	Semester	Theory		Test	Total	TW	PR	Gr Total
Nil		EXC		75	25	100	25	–	125	4

#### COURSE CONTENTS

Hrs Mks

##### 1. ELECTRONIC SWITCHING SYSTEM

Space division switching: Block diagram & operation of a Single-processor centralised SPC organisation, Dual-processor centralised SPC configurations - Standby mode, synchronous duplex mode, load sharing mode. 12 16  
Distributed SPC organisation –Vertical & horizontal distribution, Control functions of various levels. Level 1 – operation, maintenance, charging. Level 2 – Call processing. Level 3 – event monitoring & distribution.

Time Division Switching: Concept of analog and digital time division switching. Block diagram and operation of a time division space switch. Control techniques of a time division space switch.- Input controlled, Output controlled, Memory controlled. Block diagram & operation of a basic time division time switch. Control techniques of a time division time switch.- Sequential write/random read, Random write/sequential read, Random input/random output. Block diagram and operation of a basic time multiplexed space switch. Concept of a time multiplexed time switch.	16	24
<b>2. PAGING SYSTEMS</b> Introduction and overview of a paging system. Block diagram and working of a paging transmitter and receiver unit (pager). Merits and limitations of a paging system.	08	12
<b>3. CONVENTIONAL MOBILE TELEPHONE SYSTEM</b> Concept of a mobile telephone system. Description of the process of establishing a call. Advantage of mobile telephony over line telephony. Comparison with pagers.	08	12
<b>4. CELLULAR COMMUNICATION</b> Concept of a cellular switching system: Cell splitting technique, Frequency reuse. Description of the following components of a cellular system.- Cell site (base station), Mobile telephone switching office (MTSO), Cellular handset (mobile receiver) Description of the following processes in a cellular system - Log-on (initialisation), Monitoring, Receiving calls (incoming), Sending calls (outgoing), Handoff. Comparison of a cellular system with a conventional mobile telephone system. Channel types and their functions. Allocation of frequencies. Routing of cellular calls: Mobile - to - landline calling, Landline - to - mobile calling, Cellular - to - cellular calling. Antennas: Cell site antennas, Discone antenna (umbrella pattern), Minimum separation of cell-site receiving antennas, Mobile antennas, Roof mounted antennas, Mobile high-gain antennas. Global system for mobile (GSM): Subsystems of GSM, Mobile station, Base station, Network and switching subsystems (block diagram), Operation subsystems (block diagram), GSM channels and channel modes. Health hazards of a cellular system.	20	36
<b>TOTAL</b>	64	100

**FIELDS VISITS:**

1. Visit to an Electronics exchange.
2. Study of an EPABX
3. Visit to a mobile/cellular exchange.
4. Study of a pager (receiver) and a cellular handset (phone).

**REFERENCE BOOKS:**

1. Telecommunication Switching Systems and Networks by Thiagarajan Vishwanathan
2. Wireless Networked Communications by Bud Bates.
3. Mobile Cellular Telecommunications by William Lee
4. Modern Electronic Communication by Gary Miller.
5. Telecommunication Transmission Systems by Robert Winch.
6. Wireless Personal Communications by Ron Schneiderman
7. Electronic Communications Handbook by Andrew Inglis

