

LESSON PLAN (SUMMER-2025)

Discipline: ETC	Semester:6th	Name of the Teaching Faculty: Rajeev Ranjan Seth
Subject: Advance Communication Engineering	No of Days /perweek class allotted: 5	Semester From date: 04.02.2025 To date: 16.05.2025 No of Weeks: 15
Week	Class Day	Theory / Practical Topics
1st	1st	1. RADAR & NAVIGATION AIDS (10) 1.1 Basic Radar, advantages & applications
	2nd	1.2 Working principle of Simple Radar system , its types
	3rd	1.3 Radar range equation &Performance factor of radar.
	4th	1.4 Working principle of Pulsed Radar system.
	5th	1.5 Function of radar indication and Working principle of moving target indicator.
2nd	1st	1.6 Define Doppler effect & Working principle of C.W Radar.
	2nd	1.7 Radar aids to Navigation
	3rd	1.8 MTI Radar- working principle
	4th	1.9 Aircraft landing system.
	5th	1.10 Navigation Satellite System.(NAVSAT) & GPS System
3rd		2. SATELLITE COMMUNICATION (15)
	1st	2.1 Basic Satellite Transponder & Kepler's Laws
	2nd	2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
	3rd	2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage
	4th	2.4 Working of the Satellite sub system
	5th	2.5 Satellite frequency allocation and frequency bands.
4th	1st	2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
	2nd	2.7 Working principle of direct broadcast system (DBS)
	3rd	2.8 Working principle of VSAT system.
	4th	2.9 Define multiple accessing & name various types.
	5th	2.10 Time Division Multiple Accessing(TDMA) & – block diagram, its advantages & dis-advantages.
5th	1st	Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.
	2nd	2.11 Satellite Application- Communication Satellite(MSAT),
	3rd	Digital Satellite Radio.
	4th	2.12 Working principle of GPS Receiver & Transmitter& applications.
	5th	2.13 Optical Satellite Link transmitter & Receiver
6th		3. OPTICAL FIBER COMMUNICATION (15)
	1st	3.1 Basic principle of Optical communication. 3.2 Compare the advantage and disadvantage of optical fibres&metallic cables
	2nd	3.3 Electromagnetic Frequency and wave line spectrum
	3rd	3.4 Types of optical fibres&principles of propogation in a fibre using Ray Theory
	4th	3.5 Optical fiber construction
	5th	3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle numerical aperture
7th	1st	3.7 Optical fibre communication system- block diagram & working principle
	2nd	3.8 Modes of propagation and index profile of optical fiber
	3rd	3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
	4th	3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
	5th	3.11 Optical sources(Transmitter) & types – LED- semiconductor laser diodes

8th	1st	3.12 LASER -its working principles, block diagram using laser feedback control circuit
	2nd	3.13 Optical detectors – PIN and APD diodes &Block diagram using APDConnectors and splices –Optical cables - Couplers
	3rd	3.14 Optical repeater & Single Channel system
	4th	3.15 Applications of optical fibres – civil, Industry and Military application
	5th	3.16 Concept of Wave Length Division Multiplexing (WDM) principles.
9th		4. TELECOMMUNICATION SYSTEM (10)
	1st	4.1 Working of Electronic Telephone System. (Telephone Set)
	2nd	4.2 Function of switching system.
	3rd	Call procedures
	4th	4.3 Space and time switching.
	5th	4.4 Numbering plan of telephone networks (National Schemes & International Numbering)
10th	1st	4.5 Working principle of a PBX & Digital EPABX.
	2nd	Working principle of Digital EPABX.
	3rd	4.6 Units of Power Measurement.
	4th	4.7 Working principle of Internet Protocol Telephone
	5th	4.8 Working principle of Internet Telephone
11th		5. DATA COMMUNICATION (10)
	1st	5.1 Basic concept of Data Communication
	2nd	5.2 Architecture, Protocols and Standards
	3rd	5.3 Data Communication Circuits
	4th	5.4 Types of Transmission
	5th	Transmission Modes
12th	1st	5.5 Data Communication codes
	2nd	5.6 Basic idea of Error control
	3rd	Error Detection
	4th	5.7 MODEM & its basic block diagram
	5th	common features Voice Band Modem
13th		6. WIRELESS COMMUNICATION (15)
	1st	6.1 Basic concept of Cell Phone, frequency reuse channel assignment strategic
	2nd	handoff co-channel Interference and system capacity of a Cellular Radio systems.
	3rd	6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)
	4th	6.3 Wireless Systems and its Standards.
	5th	6.4 Discuss the GSM (Global System for Mobile) service and features.
14th	1st	6.5 Architecture of GSM system &
	2nd	GSM mobile station &channel types of GSM system.
	3rd	6.6 working of forward and reverses CDMA channel,
	4th	the frequency and channel specifications
	5th	6.7 Architecture and features of GPRS.
15th	1st	6.8 Discuss the mobile TCP, IP protocol.
	2nd	6.9 Working of Wireless Application Protocol (WAP).
	3rd	6.10 Features of SMS, MMS, 1G,2G,
	4th	3G, 4G& 5G Wireless network.
	5th	6.11 Smart Phone and discuss its features indicate through Block diagram.

Rajeev Ranjan Seth
Signature of the Faculty

LESSON PLAN (SUMMER-2025)		
Discipline: ETC	Semester: 4TH	Name of the Teaching Faculty: R.R. SETH
Subject:DCCN	No of Days /per week class allotted: 4	Semester From date: 04.02.2025 To 16.05.2025 No of Weeks:15
Week	Class Day	Theory / Practical Topics
1st	1st	Unit-1. Network& Protocol (8) 1.1 Data Communication
	2nd	1.1 Data Communication
	3rd	1.2 Networks
	4th	1.2 Networks
2nd	1st	1.3 Protocol & Architecture,
	2nd	1.3 Protocol & Architecture,
	3rd	1.3 Standards, OSI, TCP/IP
	4th	1.3 Standards, OSI, TCP/IP
3rd	1st	Unit-2. Data Transmission & Media (8) 2.1 Data transmission Concepts and Terminology
	2nd	2.1 Data transmission Concepts and Terminology
	3rd	2.2 Analog and Digital Data transmission
	4th	2.2 Analog and Digital Data transmission
4th	1st	2.3 Transmission impairments, Channel capacity
	2nd	2.3 Transmission impairments, Channel capacity
	3rd	2.4 Transmission media, Guided Transmission, Wireless Transmission
	4th	2.4 Transmission media, Guided Transmission, Wireless Transmission
5th	1st	Unit-3. Data Encoding (8) 3.1 Data encoding, 3.2 Digital data digital signals,
	2nd	3.2 Digital data digital signals,
	3rd	3.3 Digital data analog signals
	4th	3.3 Digital data analog signals
6th	1st	3.4 Analog data digital signals
	2nd	3.4 Analog data digital signals
	3rd	3.5 Analog data analog signals
	4th	3.5 Analog data analog signals
7th	1st	Unit-4. Data Communication & Data link control (8) 4.1 Asynchronous and Synchronous Transmission
	2nd	4.2 Error Detection
	3rd	4.3 Line configuration
	4th	4.4 Flow Control,
8th	1st	4.5 Error Control
	2nd	4.6 Multiplexing
	3rd	4.7 FDM synchronous TDM
	4th	4.8 Statistical TDM
9th	1st	Unit-5. Switching & Routing (10) 5.1 Circuit Switching networks
	2nd	5.2 Packet Switching principles
	3rd	5.3 X.25

	4th	5.4 Routing in Packet switching
10th	1st	5.5 Congestion
	2nd	5.6 Effects of congestion, congestion control
	3rd	5.6 Effects of congestion, congestion control
	4th	5.7 Traffic Management
11th	1st	5.8 Congestion Control in Packet Switching Network.
	2nd	5.8 Congestion Control in Packet Switching Network.
	3rd	Unit-6. LAN Technology (10) 6.1. Topology and Transmission Media
	4th	6.2 LAN protocol architecture
12th	1st	6.2 LAN protocol architecture
	2nd	6.3. Medium Access control
	3rd	6.3. Medium Access control
	4th	6.4 Bridges, Hub, Switch
13th	1st	6.5 Ethernet (CSMA/CD), Fiber Channel
	2nd	6.5 Ethernet (CSMA/CD), Fiber Channel
	3rd	6.6 Wireless LAN Technology..
	4th	6.6 Wireless LAN Technology..
14th	1st	Unit-7. TCP/IP (8) 7.1 TCP/IP Protocol Suite
	2nd	7.2 Basic Protocol functions
	3rd	7.2 Basic Protocol functions
	4th	7.3 Principles of Internetworking
15th	1st	7.3 Principles of Internetworking
	2nd	7.4 Internet Protocol operations
	3rd	7.4 Internet Protocol operations
	4th	7.5 Internet Protocol

Rajeev Ranjan Seth

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LESSON PLAN (SUMMER-2025)		
Discipline: ETC	Semester: 4th	Name of the Teaching Faculty: R.R. SETH
Subject: MPMC	No of Days /per week class allotted: 5	Semester From date: 04.02.2025 to 16.05.2025 No of Weeks:15
Week	Class Day	Theory / Practical Topics
1st	1st	Unit-1:Microprocessor (Architecture and Programming-8085-8-bit) (15) 1.1 Introduction to Microprocessor and Microcomputer & distinguish between them.
	2nd	1.2 Concept of Address bus, Data bus, Control bus & System Bus
	3rd	1.3 General Bus structure Block diagram.
	4th	1.4 Basic Architecture of 8085 (8 bit) Microprocessor
	5th	Cont...
2nd	1st	Cont...
	2nd	1.5 Signal Description (Pin diagram) of 8085 Microprocessor
	3rd	Cont...
	4th	Cont...
	5th	1.6 Register Organizations,Distinguish between SPR & GPR, Timing & Control Module,
3rd	1st	Cont...
	2nd	1.7 Stack, Stack pointer &Stack top.
	3rd	Cont...
	4th	1.8 Interrupts:-8085 Interrupts, Masking of Interrupt(SIM,RIM)
	5th	Cont...
4th	1st	Unit-2: Instruction Set and Assembly Language Programming (15) 2.1 Addressing data & Differentiate between one-byte, two-byte &three-byte instructions with examples.
	2nd	2.2 Addressing modes in instructions with suitable examples.
	3rd	Cont...
	4th	2.3 Instruction Set of 8085(Data Transfer, Arithmetic, Logical, Branching, Stack& I/O , Machine Control)
	5th	cont...
5th	1st	2.4 Simple Assembly Language Programming of 8085 2.4.1 Simple Addition & Subtraction
	2nd	Cont...
	3rd	2.4.2 Logic Operations (AND, OR, Complement 1's & 2's) & Masking of bits
	4th	2.4.3 Counters & Time delay (Single Register, Register Pair, More than Two Register)
	5th	2.4.4 Looping, Counting & Indexing (Call/JMP etc).
6th	1st	2.4.5 Stack & Subroutine programmes.
	2nd	2.4.6 Code conversion, BCD Arithmetic & 16 Bit data Operation, Block Transfer.
	3rd	2.4.7 Compare between two numbers
	4th	2.4.8 Array Handling (Largest number & smallest number in the array)
	5th	2.5 Memory & I/O Addressing,

7th	1st	Unit-3: TIMING DIAGRAMS. (8) 3.1 Define opcode, operand, T-State, Fetch cycle, Machine Cycle, Instruction cycle & discuss the concept of timing diagram.
	2nd	Cont...
	3rd	3.2 Draw timing diagram for memory read, memory write, I/O read, I/O write machine cycle.
	4th	Cont...
	5th	Cont...
8th	1st	3.3 Draw a neat sketch for the timing diagram for 8085 instruction (MOV, MVI, LDA instruction).
	2nd	Cont...
	3rd	Cont...
	4th	Unit-4 Microprocessor Based System Development Aids (10) 4.1 Concept of interfacing
	5th	4.2 Define Mapping & Data transfer mechanisms - Memory mapping & I/O Mapping
9th	1st	4.3 Concept of Memory Interfacing:- Interfacing EPROM & RAM Memories
	2nd	4.4 Concept of Address decoding for I/O devices
	3rd	4.5 Programmable Peripheral Interface: 8255
	4th	Cont...
	5th	4.6 ADC & DAC with Interfacing.
10th	1st	Cont...
	2nd	4.7 Interfacing Seven Segment Displays
	3rd	4.8 Generate square waves on all lines of 8255
	4th	4.9 Design Interface a traffic light control system using 8255.
	5th	Cont...
11th	1st	4.10 Design interface for stepper motor control using 8255.
	2nd	4.11 Basic concept of other Interfacing DMA controller, USART
	3rd	Unit-5 Microprocessor (Architecture and Programming-8086-16 bit) (12) 5.1 Register Organisation of 8086
	4th	5.2 Internal architecture of 8086
	5th	Cont...
12th	1st	5.3 Signal Description of 8086
	2nd	Cont...
	3rd	5.4 General Bus Operation & Physical Memory Organisation
	4th	5.5 Minimum Mode & Timings, 5.6 Maximum Mode & Timings,
	5th	5.7 Interrupts and Interrupt Service Routines, Interrupt Cycle, Non-Maskable Interrupt, Maskable Interrupt
13th	1st	5.8 8086 Instruction Set & Programming: Addressing Modes, Instruction Set, Assembler Directives and Operators,
	2nd	5.9 Simple Assembly language programming using 8086 instructions.
	3rd	Unit-6 Microcontroller (Architecture and Programming-8 bit) (15) 6.1 Distinguish between Microprocessor & Microcontroller
	4th	6.2 8 bit & 16 bit microcontroller 6.3 CISC & RISC processor
	5th	6.4 Architecture of 8051 Microcontroller
	1st	6.5 Signal Description of 8051 Microcontrollers

14th	2nd	6.6 Memory Organisation-RAM structure, SFR
	3rd	6.7 Registers,timers,interruptsof8051Microcontrollers
	4th	6.8 Addressing Modes of 8051
	5th	6.9 Simple 8051 Assembly Language ProgrammingArithmetic & Logic Instructions , JUMP, LOOP, CALL Instructions, I/O Port Programming
15th (EXTRA)	1st	Cont...
	2nd	6.10 Interrupts, Timer & Counters
	3rd	6.11 Serial Communication
	4th	6.12 Microcontroller Interrupts and Interfacing to 8255
	5th	Cont...

R.R. SETH

Signature of the Faculty