



C.U.SHAH UNIVERSITY–Wadhwan City

FACULTY OF: -Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electronics and Communication Engineering

SEMESTER: - V **CODE:-** 2TE05MCI1

NAME – Micro Controller & Interfacing (MCI)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	To		Theory				Practical (Marks)			Total
											Internal		University	
							Sessional Exam		University Exam		Pr	TW	Pr	
							Marks	Hours	Marks	Hours				
2TE05MCI1	Micro Controller & Interfacing (MCI)	03	00	04	07	05	30	1.5	70	3.0	---	20	30	150

Objectives:-

- This course provides information about the basic introduction of microcontroller. Microcontroller is the major tool of all embedded electronic equipments and is used in most of the areas of electronics. They consist of product ranges from petite consumer electronic products to complex industrial circuits. Programming practices will further help the students to develop indigenous microcontroller based applications

Prerequisites: -

- Basic concepts of Digital electronics and Micro processor.

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Basics of microcontroller Block diagram of digital computer, microprocessor and micro controller, features of Microcontrollers, architectures of microcontroller,(Harvard, Von Neumann RISC and CISC) , applications of microcontroller	6
2	8051 Hardware Architecture of 8051, Pin diagram of 8051,Clock circuit, reset Circuit, Memory organization of 8051,Stack , Stack Pointer and operation, Mode of Timers and counters, function and structure of I/O Ports, Serial communication, Interrupt and its mechanism, idle and power down mode of operation	12
3	8051 Programming Addressing modes and Its types, Data Transfer, Arithmetic, Logical, Branching, and Machine Control, Looping , Counting, sorting and Indexing, Conditional execution, Data manipulation, Masking, Stack operation, Time delay generation, Interrupt mechanism and port programming, serial communication	12
4	8051 Interfacing Interface Input Devices with 8051 microcontroller(Switch, Pushbutton, DIP, Tilt) Interface Output devices with 8051 microcontroller(relay, motor, solenoid, LED, LCD) Interface ADC with 8051 microcontroller (ADC0804), Interface DAC (DAC0808) with	10



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	8051 microcontroller, Interface PC with 8051 microcontroller.	
5	8051 Applications List Various Applications of 8051, temperature indicator, liquid level indicator, traffic light controller, stepper motor control	08

Learning Outcomes:-

- Student can acquire the basic Knowledge of microcontroller.
- Students will be able to know about to Select appropriate microcontroller for different application
- Interface microcontroller with hardware for given application
- Write and execute assembly language programs (software) for given application
- Develop small microcontroller based applications using Relay, Switches, Opto Electronics Devices and sensors

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. The 8051 Microcontroller and Embedded Systems Using Assembly and C, **Mazidi and McKinlay**, Pearson.
2. The 8051 Micro controller Architecture, Programming and Applications, **K. J. Ayala**, Penram.
3. 8051 Microcontrollers MCS Family and Its variants, **Satish Shah**, Oxford University Press.
4. Microcontrollers: Architecture, Programming, Interfacing and System Design, **Raj Kamal**, Pearson.
5. 8051 Microcontroller & Embedded System Sampath K. Venkatesh Katson.



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FACULTY OF: - Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: - Electronics and Communication Engineering

SEMESTER: - V **CODE:-** 2TE05FOM1

NAME: - Fundamental of Management

Teaching & Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme				Evaluation Scheme							
		Th	Tu	Pr	Total	Theory				Practical (Marks)			Total
						Sessional Exam		University Exam		Internal		University	
						Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
2TE05FOM1	Fundamental of Management(FOM)	02	00	00	02	30	1.5	70	03	---	---	----	100

Objectives: -

- The objective of the course is to provide an understanding and an introduction to the basic functional areas of management such as Marketing, Finance, Human Resources, Production and other types of management. The emphasis of the course is to give basic introduction to the concepts. At the same time an attempt is made to incorporate relevant basic topics of management.

Prerequisites: -

- None

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Introduction: What is Management? Evolution, Various definitions, Concept of management, Levels of management, Administration & management, Scientific management by F. W. Taylor, Principles of Management (14 principles of Henry Fayol), Functions of Management: Planning, Organizing, Directing, Controlling	05
2	Marketing Management: Marketing Function: The four P's in Marketing, Different concepts in marketing, Production, Product, Selling, Marketing, Societal and holistic. Marketing Demand: Method of demand forecasting- survey of buyers' intentions, sales force opinion method, expert opinion method, market test method, time series analysis, statistical demand analysis (concepts only no examples).	06
3	Finance Management: Meaning of finance and scope of financial management, Finance functions, Financial management and role of financial manager, Objectives of Financial management	04
4	Production Management: Meaning, characteristics, plant location, factors affecting location, Plant layout: Product and process layout – meaning, merits and demerits, Break-even analysis (sums).	08
5	Human Resource Management: Importance, Manpower planning : concept and features and objectives, Manpower planning process, Recruitment : sources of recruitments, Selection : process of selection, Selection tests : types of tests	07



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6	Material Management: Inventory Management (No Numerical), Meaning & Objectives, ABC Analysis, Economic Order Quantity - Introduction & Graphical Representation, Purchase Procedure - Objects of Purchasing, Functions of Purchase Department - Steps in Purchasing, Modern Techniques of Material Management - Introductory treatment to JIT / SAP / ERP	06
7	Project Management (No Numerical) Introduction & Meaning, Introduction to CPM & PERT Technique, Concept of Break Even Analysis, Quality Management - Definition of Quality , concept of Quality, Quality Circle, Quality Assurance, Introduction to TQM, Kaizen, 5 'S', & 6 Sigma	06

Learning Outcomes:-

- The students will familiarize in the world of work.
- Able to understand the importance of management.
- Able to identify the various types of management.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. Principles and Practices of Management by L. M. Prasad.
2. Principles of Management by Tripathy and Reddy.
3. Business Organization and Management by C. B. Gupta.
4. Management by James Stoner and Edward Freeman.
5. Management by Herold Knootz and Heinz Wechnch.
6. Principles of Management, Charles WL.
7. Industrial Engg and Management by Dr. O.P.Khanna
8. Business Administration and Management by Dr. S.C. Saksena
9. The process of Management by W.H. Newman, E.Kirby Warren, Andrew R. McGill



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FACULTY OF: -Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electronics and Communication Engineering

SEMESTER: - V **CODE:** - 2TE05MAF1

NAME – Microwave Engineering & antenna Fundamentals (MAF)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	To		Theory				Practical (Marks)		Total	
											Internal			University
							Sessional Exam		University Exam		Pr	TW		Pr
							Marks	Hours	Marks	Hours				
2TE05MAF1	Microwave Engineering & antenna Fundamentals (MAF)	04	00	02	06	05	30	1.5	70	3.0	---	20	30	150

Objectives:-

- The awareness of microwave devices is crucial for electronics and communication engineering diploma holders and they need to understand it in order to maintain Microwave devices used in area of Telecommunication. Hence, the basic knowledge of microwave signal generation, propagation, amplification and measurement is vital. This course has been designed to achieve the diploma engineer will maintain microwave devices and components and accessories used in communication.

Prerequisites: -

- Basic concepts of Network theory and Electromagnetic.

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Basics of antenna Properties of electromagnetic waves, electric & magnetic field of steady electric current. Electromagnetic field and its radiation from A center fed dipole, Elementary radiator, Power radiated by elementary dipole using Pointing Vector method. Antenna Impedance, Radiation Resistance Radiation Pattern Beam area and beam efficiency ,Isotropic radiator gain, Directivity and Gain, Radiation Intensity, Half Power BW, Polarization, Antenna losses, Antenna efficiency, Effective Aperture, Effective length of antenna, Effects of antenna height, Antenna Temperature, Front to Back ratio, Antenna field zones, Resonant wire antennas (λ , 2λ), Non Resonant (Rhombic) Antenna, Helical antenna, Parabolic reflector antenna, Horn antenna, Loop antenna, Folded dipole antenna, Antenna Arrays, Yagi-uda antenna	08
2	Transmission lines and Microwave Microwave band, limitation and application, Transmission lines, parameters, General equation, lossless transmission, $\lambda/4$ line, Standing wave, VSWR, Reflection coefficient, Stub Matching, Skin effect	08
3	Microwave Wave guide and components Propagation of microwave, comparison of Wave guide with transmission line, Rectangular	14



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	Wave guide parameters with calculation, cut off wave length, TE and TM mode, V_g , V_p , Field pattern, circular waveguide, Tee, magic Tee, Hybrid Ring, isolator, circulator, Duplexer, directional coupler, Bend, Tappers, Cavity resonator	
4	Microwave Tubes and Semiconductor devices Limitation of vacuum tube, klystron as an amplifier, Multicavity klystron, Reflex klystron, Magnetron, TWT, BWO, Microwave diode, varactor Diode, Gunn Diode, IMPATT diode, TRAPATT diode, PIN diode, Tunnel diode, Parametric amplifier, MASER	12
5	Radar system and Microwave Measurement Basic principle of Radar, Duplexer, Radar range equation, factors affecting maximum range, Pulse radar, radar antenna and scanning and tracking methods, Display methods, Blind speed, MTI radar, CW Doppler radar, FMCW radar, Comparison of pulsed radar and MTI radar, Microwave power, frequency, VSWR, Attenuation, time period, Q factor Wave length measurement techniques	12

Learning Outcomes:-

- Student can acquire the basic Knowledge of Microwave & antenna.
- Students will be able to know about to Select appropriate antenna for different purpose
- Knowledge about Radar System & Microwave Measurement.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. Microwave Engineering, **Sanjiv Gupta**, khanna publication.
2. Electronics Communication System, **Kennedy George**, Tata McGraw Hill.
3. Microwave devices and circuits, **S. Y. Liao**, Pearson Pub.
4. Antenna Wave Propagation, **Jhon D Kraus**, Tata McGraw Hill, 2006
5. Antenna Wave Propagation, **G.S.N.Raju**, Pearson Education.



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FACULTY OF: - Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electronics & Communication Engineering

SEMESTER: - V **CODE:** -2TE05PLC1

NAME – Programmable Logic Controllers (PLC)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Schemes (Hours)				Credits	Evaluation Schemes							
		Th	Tu	Pr	To		Theory				Practical (Marks)		Total	
							Sessional Exam		University Exam		Internal			University
							Marks	Hours	Marks	Hours	Pr	TW	Pr	
2TE05PLC1	Programmable Logic Controller s (PLC)	03	00	02	05	04	30	1.5	70	3.0	---	20	30	150

Objectives:-

- Students should have detailed skill of controlling any system. Programmable Logic Controller (PLC) is a very important device to control any system and is widely used in industries now a days. So, the person who wants to work in control and automation industries must have enhance knowledge of PLC. This course gives a detailed knowledge and practice of PLC hardwre and programming.

Prerequisites:-

- Digital Logic Design, Concept of Micro Processor and Micro Controller, Relay Logic, Control System, Knowledge of programming and flow charts

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Programmable Logic Controllers & Input / Output Devices: Controllers, Hardware, Internal architecture, PLC systems, Input devices, Output devices, Examples of applications.	08
2	Input / Output processing: Input/output units, Signal conditioning, Remote connections, Networks, Processing inputs, I/O addresses.	06
3	Ladder and functional block programming & Internal relays: Ladder diagrams, Logic functions, Latching, Multiple outputs, Entering programs, Function blocks, Program examples, Internal relays, Ladder programs, Battery-backed relays, One-shot operation, Set and reset, Master control relay.	08
4	IL, SFC and ST programming methods: Instruction lists (IL), Sequential function charts (SFC), Structured text (ST).	04
5	Data handling, Jump and call : Registers and bits, Data handling, Arithmetic functions, Closed loop control, Jump, Subroutines.	08
6	Timers, Counters & Shift Registers: Types of timers, Programming timers, Off-delay timers, Pulse timers, Programming examples, Forms of counter, Programming, Up and down counting, Timers with counters, Sequencer, Shift registers, Ladder programs.	06



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7	Designing systems & Programs: Program development, Safe systems, Commissioning, Fault finding, System documentation, Temperature control, Valve sequencing, Conveyor belt control, Control of a process.	08
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Learning Outcomes:-

After successful completion of the course, students should:

- Compare conventional sequential control with programmable logic control system.
- Develop programs using ladder diagrams for sequential and continuous process.
- Interface different analog and digital input/ output devices with PLC using different communication protocol.
- Test the PLC based system and troubleshoot the errors associated with it.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. Programmable Logic Controllers, **W. Bolton**, Elsevier Newnes publication, 4th edition.
2. Programmable Logic Controllers: Principles and Applications, **John W. Webb and Ronald A. Reis**, PHI publication, 5th edition.
3. Programmable logic controller, **Frank D. Petrusella**, Tata McGraw-Hill publication.
4. Programmable Logic Controllers: Programming methods and applications, **John R. Hackworth and Frederick D. Hackworth Jr.**, Pearson publication.
5. Introduction to programmable logic controller, **Gary dunning**, Thomson Asia Pte Ltd. Publication, Singapore.



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FACULTY OF: -Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electronics and Communication Engineering

SEMESTER: - V **CODE:** -2TE05MCM1

NAME – Mobile Communication (MCM)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	To		Theory				Practical (Marks)		Total	
							Internal		University					
							Sessional Exam		University Exam		Pr	TW		Pr
Marks	Hours	Marks	Hours											
2TE05MCM1	Mobile Communication (MCM)	03	00	02	05	04	30	1.5	70	3.0	--	20	30	150

Objectives:-

- The cellular mobile communication has seen an exponential growth over the years. Not only that, but there are different technologies such as GSM and CDMA with their variations and the 4th generation mobile technology is the latest one. This scenario demands the need for more skilled technicians for operation, maintenance and servicing of mobile cellular systems. This course gives the opportunity to the students to learn the fundamentals of these technologies which they will find in the workplace. Hence this course is designed to maintain various types of mobile communication systems.

Prerequisites: -

- The course content should be taught and with the aim to develop different types of skills So that students are able to acquire following competency: Maintain mobile communication systems

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Cellular Communication:- Cellular communication Standards-1G, 2G and 3G, Basic cellular concept and cellular system, Type of Cell: macro, micro, Pico, Selective and umbrella cell, Cluster concept and frequency reuse, GSM capacity, Co-channel and adjacent channel interference, Channel assignment strategies, Enhancing coverage and capacity of cellular system: cell splitting and cell sectoring, Handoff : soft and hard, inter and intra system, Multiple access techniques: FDMA,TDMA and CDMA Space Division Multiple Access (SDMA)	10
2	GSM-Global System for Mobile Communication :- GSM architecture, GSM 900 system specification, GSM channel types: Traffic, control, GSM burst and frame structures, GSM call Procedure, Frequency hopping: Fast and Slow, Power control in GSM, Signal processing in GSM, GSM speech codec, GSM Modulation Techniques: GMSK, GSM Identifier: IMSI,IMEI,TMSI,MSISDN, LAI and BSIC.	16
3	Mobile Handset:- Mobile handset: block diagram, Baseband section, Digital signal processor used in mobile hand set, Charging control section, Batteries, Memories, SIM card and SIM card interface, General faults and fault finding procedures, Radiation hazards due to Mobile, SAR.	10



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4	Spread spectrum:- Spread spectrum technique and Applications, Advantages of CDMA, Spreading codes (PN and Walsh code): generation and detection, Types of spread spectrum technique: DSSS- Direct sequence spread spectrum, FHSS- Frequency hopping spread spectrum, Power control, Channel capacity, Call Processing.	10
5	WCDMA and 4G aspects:- GPRS- General Packet Radio Service: Block diagram, applications, EDGE- Enhanced Data rate for Global Evolution, HSDPA, 4th Generation technology: OFDM, MIMO, Software define radio.	10

Learning Outcomes:-

- The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.
 - i. Identify different standards of mobile communication systems.
 - ii. Maintain Global System for Mobile (GSM) systems.
 - iii. Troubleshoot GSM mobile handsets.
 - iv. Test the functionality of various modules of CDMA cellular systems.
 - v. Test the functionality of various modules of 4G systems.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. Wireless communication principle & Practice, **Rapport T.S.**, PHI Learning, New Delhi, (Latest Edition)
2. Mobile and Personal Communication System and Servicing, **Pandya Raj**, IEEE
3. Mobile Communication, **Lee C. Y.**, Pearson, New Delhi (Latest Edition) Pearson, New Delhi (Latest Edition)
4. Mobile Cellular Telecommunication System, **Lee C.Y.**, TMH, New Delhi, (Latest Edition)
5. Wireless communication, **Dalal Upena**, OXFORD New Delhi
6. Advance Mobile Repairing, **Pandit Sanjib**, BPB, (Latest Edition)
7. Mobile Communication, **Schiller**, PHI Learning, New Delhi, (Latest Edition)



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FACULTY OF: -Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electronics and Communication Engineering

SEMESTER: - V **CODE:** -2TE05TLS1

NAME – Telecom Switching (TLS)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	To		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr	TW	Pr	
2TE05TLS1	Telecom Switching (TLS)	03	00	02	05	04	30	1.5	70	3.0	---	20	30	150

Objectives:-

- Every day, in our work and in our leisure time, we use and come in contact with a variety of Modern communication systems. The most common being the telephone, television, wireless Systems and internet. The main objectives of this subject are to provide in depth knowledge of Telephone switching systems, traffic Engineering & Telephone Networks

Prerequisites: -

- Basic concepts of switching systems & Telecom Networks.

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Introduction:- Evolution of Telecommunication, Simple Telephone communication, Basics of a switching system, Major telecommunication networks.	04
2	Electronic Space Division Switching:- Stored program control, Centralized SPC, Distributed SPC, Enhanced Services, Two-stage networks, Three-stage networks, n-stage networks.	08
3	Speech Digitisation and Coding: Sampling, quantization and binary coding, companding, Differential coding, vocoders.	08
4	Time Division Switching: Basic time division space switch, Basic time division time switching, Time multiplexed space switching, Time multiplexed time switching, Combination switching, Three-stage combination switching, n-stage combination switching.	08
5	Traffic Engineering: Network traffic load and parameters, Grade of service and blocking probability, Delay systems.	08
6	Telephone Networks: Subscriber loop system, Switching hierarchy and routing, Transmission plan, Transmission systems, Numbering plan, Charging plan, Signalling techniques, In-channel signalling, common channel signalling,	08



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Learning Outcomes:-

- Student can acquire the basic Knowledge of switching systems.
- Students will be able to know about architecture and performance of telecom networks.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. Telecommunication Switching Systems and Networks, **T. Viswanathan**, PHI.
2. Telecommunications Switching, Traffic and Networks, **JE Flood**, Pearson.
3. Telecommunication Switching Systems and Networks, **V.S.Bagad**, Technical Publications.
4. Telecommunication Switching and Networks, **P. Gnanasivam**, New Age International, 2005



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FACULTY OF: - Technology & Engineering (Diploma Engineering)

DEPARTMENT OF: - Electronics & Communication Engineering

SEMESTER: - V **CODE:-** 2TE05OFC1

NAME – Optical Fiber Communication (OFC)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Schemes (Hours)				Credits	Evaluation Schemes							
		Th	Tu	Pr	To		Theory				Practical (Marks)		Total	
							Internal		University					
							Sessional Exam		University Exam		Pr	TW		Pr
Mar ks	Hours	Marks	Hours											
2TE05OFC1	Optical Fiber Communication (OFC)	03	00	02	05	04	30	1.5	70	3.0	--	20	30	150

Objectives:-

- To expose the students to the basics of signal propagation through optical fibers
- To develop knowledge about structures of optical fibers
- To know about different degradation in fibers
- To learn about different optical sources and receivers
- To study about different optical networks

Prerequisites:-

- Students should have a firm grasp of elementary engineering electromagnetics and the different concepts of communication theory.

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Overview of Optical Fiber Communications : Motivations for Light wave Communications, Optical Spectrum Bands, WDM Concepts, Key Elements of Optical Fiber Systems, Standards for Optical Fiber Communications.	03
2	Optical fibers Waveguides: Introduction, Ray theory transmission: Total Internal Reflection, Acceptance Angle, Numerical Aperture, Skew rays, Electromagnetic mode theory for optical propagation: Modes in planar guide, Phase and group velocity, Cylindrical Fiber: Modes, Mode Coupling, Step Index fibers, Graded Index fibers, Single Mode Fibers: Cut off Wavelength, Mode-field diameter and spot size, Effective refractive index.	07
3	Attenuation and Dispersion: Attenuation: Attenuation units, Absorption, Scattering Losses, Bending Losses, Core and Cladding Losses, Signal distortion in optical fibers: Overview of distortion origins, Modal delay, Factors Contributing to Dispersion, Group delay, Material dispersion, Waveguide dispersion, Polarization-mode dispersion, Characteristics of Single Mode Fibers- Refractive Index profiles, Refractive-Index Profiles, Cutoff Wavelength, Dispersion Calculations, Mode-Field Diameter, Bending Loss.	08
4	Optical Sources : Semiconductor Physics: Energy bands, Intrinsic and Extrinsic Material, The PN junctions, Direct and Indirect band gaps, Light emitting diode (LEDs): LED structures, Light source	06



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	materials, Quantum Efficiency and LED Power, Modulation of LED. Laser Diodes:-Modes & threshold conditions, External Quantum Efficiency, Diode Rate equations, resonant frequencies, structures and radiation patterns, single mode lasers, Modulation of laser diodes, Laser Line-width, External Modulation, temperature effects.	
5	Optical detectors Introduction, Device types, Optical detection principles, Absorption: Absorption coefficient, Direct and indirect absorption: silicon and germanium, III–V alloys, Quantum efficiency, Responsivity, Long-wavelength cut off, Physical Principles of photodiodes: pin photo detector, avalanche photo detector, Detector response time, Structure for InGaAs APDs, Temperature effects on gain, Comparison of photo detectors.	08
6	Optical Receiver Operation and Digital Links: Fundamental Receiver operation: Digital Signal Transmission, Front-end amplifier, Digital receiver performance: receiver sensitivity, quantum limit, Eye diagrams, Coherent detection: Fundamental concepts, Homodyne and Heterodyne detection, BER comparisons.	06
7	Optical Amplifiers : Basic Applications and Types of Optical Amplifiers, EDFA: Amplification Mechanism and EDFA architecture, Raman Amplifier, Wideband Optical Amplifiers	04
8	Optical fiber measurements: Introduction, Fiber attenuation measurements, Fiber dispersion measurements, Fiber refractive index profile measurements, Fiber cutoff wavelength measurements, Fiber numerical aperture measurements, Fiber diameter measurements, Mode-field diameter for single-mode fiber, Reflectance and optical return loss, Field measurements.	06

Learning Outcomes:

After the successful completion of the course, students will be able to

- Recognize and classify the structures of Optical fiber and types.
- Discuss the channel impairments like losses and dispersion.
- Analyze various coupling losses.
- Classify the Optical sources and detectors and to discuss their principle.
- Familiar with Design considerations of fiber optic systems.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. Optical Fiber Communications by Gerd Keiser, 4th Edition (McGraw Hill)
2. Optical Fiber Communication by John M. Senior (PHI/Pearson)
3. Fiber optic Communication Systems by G. Agrawal (John Wiley and sons)
4. Fiber optical communication Technology by Djafar Mymbaev & Lowell L. Scheiner. (Pearson)
5. Optical Fiber Communication by Joseph C. Palais



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FACULTY OF: - Technology & Engineering (Diploma Engineering)

DEPARTMENT OF: - Electronics & Communication Engineering

SEMESTER: - V **CODE:** - 2TE05CME1

NAME – Consumer Electronics (CME)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Schemes (Hours)				Credits	Evaluation Schemes							
		Th	Tu	Pr	To		Theory				Practical (Marks)			Total
											Internal		University	
							Sessional Exam		University Exam		Pr	TW	Pr	
						Marks	Hours	Marks	Hours					
2TE05CME1	Consumer Electronics (CME)	03	00	02	05	04	30	1.5	70	3.0	...	20	30	150

Objectives:-

- To study the knowledge on home appliances
- Maintain various consumer electronic applications.

Prerequisites: -

- Basic knowledge electronics and circuits. Fundamental knowledge of communication as well as microprocessor/microcontroller is essentially required.

Course Outlines:-

Sr. No.	Course Contents	Hours
1	Audio system: Basics of microphone and loud speaker, characteristics of speakers, multi speaker system, crossover networks, impedance matching, PA system: introduction, planning, speaker matching, characteristics, amplifiers, interconnections of kit, Theatre sound system: sound track recording on film, sound reproduction from sound track, block diagram and working of a theatre sound system, Sound recording: Optical recording, stereophony and multichannel sound.	10
2	Television Receivers and Video Systems: PAL-D color TV receiver, block diagram, Precision IN Line color picture tube, LCD, LED PLASMA, HDTV, 3-D TV, projection TV, DTH receiver, Video interface: Composite, Component, Separate Video, Digital Video, SDI, HDMI Multimedia Interface) , Digital Video Interface, CD and DVD player: working principles, interfaces, pattern generator	10
3	Computers: Analysis of a computer: Motherboard, CPU, SMPS, Expansion slots, Front Panel / Rear side connectors, switches and indicators, specification parameters, Schematics and operations of input devices: Keyboard, Mouse, Touch pads, Joysticks, Scanners, Barcode reader, Schematics and operations of output devices: Dot matrix printers, Laser printers, Color printers, Plotters, Display Devices: video basics, anatomy of CRT, LCD and TFT displays, resolution, dot pitch, data projectors, touch screens, HDD: Introduction, HDD construction, operation, HDC block diagram, working principle, IDE, SCSI, ultra ATA, and SATA series, installation, partitioning, formatting, Boot record Modem: block diagram and operation	10



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4	Household / Office Appliances: FAX and Photocopier, Microwave Oven: types, single chip controllers, wiring and safety instructions, specification, Washing Machine: wiring diagram, electronic controller for washing machine, technical specifications, types of washing machine, fuzzy logic, Air conditioner and Refrigerators: Components features, applications, and technical specification, Digital camera and cam coder: catch up devices, picture handling & storing	10
5	AUTOTRONICS: Applications of solid state devices in automobiles, Car engine management system, Electronic ignition lock system, Electronically controlled suspension Car safety belt system, Vehicle proximity detection system Car navigation system	08

Learning Outcomes:-

Upon successful completion of this subject, students should:

- Test working of various color TV
- Troubleshoot color TV receivers.
- Maintain various electronic home appliances.
- Troubleshoot Computer and its peripheral devices.

Teaching & Learning Methodology:

- Lecture method using standard teaching aids.
- Solving term assignments in tutorials.
- Quiz/Seminar/Expert lectures

Books Recommended:-

1. “Modern Television practices” R. R. Gulati, New Age International Publication (P) Ltd.
2. “Consumer Electronics” Bali S.P, Pearson Education India.
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