

Maharaja Agrasen Institute of Technology
Department of Electronics and Communication Engineering

Course Outcomes Summary
Theory

	Course Name: Applied Physics- I
	Upon completion of the course, the student will be able to:
C.103.1	Understand the basic principles of interference of Light waves and their formulations in the area of engineering.
C.103.2	Illustrate the phenomenon of Diffraction and Polarization of Light waves for developing High Resolution instruments and polarimeters.
C.103.3	Analyze role of Fibers and Lasers in all forms of communication.
C.103.4	Interpret the data as perceived in any given frame of reference to another frame of reference.
C.103.5	Develop an understanding about the production and increasing application of Ultrasonic.
C.103.6	Analyze the importance of Nuclear Physics in solving Energy issues ,decay of materials, building particle accelerators and radiation detectors
	Course Name: Electrical Technology
	Upon completion of the course, the student will be able to:
C.107.1	Define the Circuit parameters, energy sources and applications of various Circuit Theorems.
C.107.2	Identify the use of Star-Delta Transformation and its applications in assessment of DC and AC circuits.
C.107.3	Evaluate the Steady State Response of Series and Parallel Circuits, and determine the importance of 3-phase circuits.
C.107.4	Classify and compare the Basics of measuring instruments and their types.
C.107.5	Develop an understanding of Wattmeter, Energy Meter, and other instruments and elaborate the Fundamentals of Magnetic Circuits.
C.107.6	Identify the principles of transformer and different types of motors.
	Course Name: Human Values and Professional Ethics
	Upon completion of the course, the student will be able to:
C.109.1	Analyse what is 'right' and what is 'wrong' depending upon their natural acceptance and self –exploration.

C.109.2	Develop a correlation between personal as well as collective happiness and prosperity and will be able to investigate and interpret themselves better.
C.109.3	Define their nation, society, and nature as extension of their family to demonstrate responsible actions to promote harmony, justice, safety, trust and health at four levels of living: Myself, Family, Society, and Nature.
C.109.4	Illustrate things positively and extend the practice of ethical human behaviour and conduct for establishing Universal Human Order.
C.109.5	Define the importance of ethical obligation of engineering professionals like Sincerity, Accountability and Collegiality for establishing conflict free systems in the society.
C.109.6	Extend themselves into valuable professions and learn to translate their awareness to others for sustainable development.
	Course Name: Fundamentals of Computers
	Upon completion of the course, the student will be able to:
C.111.1	Recognize and understand the functionality of basic components of computer system, both hardware and software.
C.111.2	Classify & describe different Operating System (DOS, Windows, and Linux) along with their supporting Utilities.
C.111.3	Learn the concept of file system of Linux Operating System including file permissions, rpm and deb based packages.
C.111.4	Demonstrate the use of network, network media, network hardware and various network topologies.
C.111.5	Explain the basics of DBMS along with three levels of abstraction.
C.111.6	Understand the working knowledge of Libre office and its applications (worksheet management, power point presentation, Templates etc.)
	Course Name: Applied Chemistry-I
	Upon completion of the course, the student will be able to:
C.113.1	Identify current techniques and generate innovative solutions in designing efficient, eco-friendly fuels and catalysts.
C.113.2	Analyze fuel engine problems, select and make efficient use of fuels and catalysts in industries.
C.113.3	Develop an understanding of environmental aspects of catalysts and relate kinetics of catalytic reactions in research work.
C.113.4	Acquire the knowledge of analysis of water, utilize and design new chemical systems.
C.113.5	Demonstrate the new techniques used in phase transfer and analytical reactions in water and corrosion testing.
C.113.6	Illustrate corrosion preventing techniques and apply the principles to manage new projects.
	Course Name: Applied Mathematics II

	At the completion of this course, student will be able to:
C.102.1	Implement partial derivatives to calculate errors, approximations and find jacobians.
C.102.2	Develop skills to formulate and solve different partial differential equations arising in physical modeling of various phenomenon.
C.102.3	Implement Laplace transformations for solving ordinary differential equations.
C.102.4	Demonstrate the complex functions, analytic functions, complex integration and residues.
C.102.5	Identify real definite integrals using complex integral theorem or residue theorem.
C.102.6	Illustrate the concept of Greens theorem, Stokes theorem and Divergence theorem to magnetism as well as fluid flow
	Course Name: Applied Physics II
	At the completion of this course, student will be able to:
C.104.1	Understand the basic physics principles and tools of Physics to demonstrate production and transmission of electromagnetic waves.
C.104.2	Identify Blackbody radiation and basic formulation of classical and quantum statistical physics to explain the overall behavior of system of particles.
C.104.3	Develop an understanding of basic quantum mechanics and its applications in various fields like Electronics, Cryptography and Quantum Computing
C.104.4	Define the science of crystallography & the applications of semiconductor devices.
C.104.5	Implement the knowledge of physics in making monetary projects and presenting them.
C.104.6	Define the carrier transmissions using Hall Techniques for developing high precession devices.
	Course Name: Electronic Devices
	At the completion of this course, student will be able to:
C.106.1	Define the concepts of Electronics, associated semiconductor devices and application areas.
C.106.2	Demonstrate the movement of charge carriers in semiconductors and summarize various properties of a PN junction diode.
C.106.3	Design and analyze special diodes and the circuits using these diodes for various applications.
C.106.4	Classify the concepts of various semiconductor transistors.
C.106.5	Design and analyze various circuits under different configurations based on semiconductor transistors.
C.106.6	Illustrate the basics of digital electronics, Boolean algebra and minimization techniques to analyze circuits using logic gates.

	Course Name: Introduction to Programming
	At the end of the course, a student will be able to:
C.108.1	Illustrate the basic terminology used in the programming language.
C.108.2	Develop programs using the elements like decision structure involving control statements and loops.
C.108.3	Summarize the concept of different operators and classes in the language.
C.108.4	Demonstrate dynamics of memory by the use of pointers, strings and code reusability with the help of arrays & user defined functions.
C.108.5	Define the concepts of structure and union for different application.
C.108.6	Interpret the basics of file handling that is essential for making applications.
	Course Name: ENGINEERING MECHANICS
	Upon completing this course, students will be able to:
C.110.1	Interpret the Free body diagram, Equilibrium equations and applications
C.110.2	Illustrate and visualize the Static and Kinetic friction, laws of dry friction, coefficient of friction, angle of friction, angle of repose, cone of friction, friction lock, friction of flat pivot and collared thrust bearings, Belt drive.
C.110.3	Demonstrate the concept of Plane truss, perfect and imperfect truss, analysis of perfect plane trusses, method of section. Determination of centre of gravity, centre of mass and centroid, mass moment of inertia and area moment of inertia, radius of gyration, parallel axis theorem, Pappus theorems, polar moment of inertia
C.110.4	Identify the Rectilinear motion, plane curvilinear motion-rectangular coordinates, normal and tangential component, equation of motion, work energy equation, conservation of momentum, co-efficient of restitution, loss of energy during impact.
C.110.5	Analyze the concept of rigid body, type of rigid body motion, absolute motion, relative velocity, relative acceleration and instantaneous centre of velocity, Velocity and acceleration polygons for four bar mechanism and single slider mechanism.
C.110.6	Define and make use of Equations of motion, translatory motion and fixed axis rotation, application of work energy principles to rigid bodies' conservation of energy, shear force and bending Moment Diagram.
	Course Name: Communication Skills
	At the completion of this course, student will be able to:
C.112.1	Identify and rectify the grammatically incorrect expressions in their spoken and written language.
C.112.2	Classify and understand meaning and usage of different words, expressions and idioms and hence extend and exhibit improved comprehension.
C.112.3	Implement written and spoken language in interpersonal communication and

	develop an awareness to define, identify and respond to differences in cultural contexts, ideas and languages.
C.112.4	Analyse their intelligence in writing and summarizing different types of paragraphs, technical descriptions and compositions.
C.112.5	Develop the vision of reading between the lines to draw and utilize ethical, symbiotic and pragmatic lessons from written texts.
C.112.6	Implement critical and creative thinking for conducting an effective oral and written communication.
	Course Name: Environmental Studies
	At the completion of this course, student will be able to:
C.114.1	Acquire knowledge to classify environmental ecosystem and biodiversity conservation.
C.114.2	Develop research capabilities in environmental energy, natural resources both renewable & non-renewable.
C.114.3	Implement the knowledge to adopt green environmental friendly & sustainable technologies.
C.114.4	Classify & rephrase experimental processes logically in research organizations & society.
C.114.5	Implement engineering knowledge in modeling an environment to deal with the real world global problems.
C.114.6	Identify the desired needs and responsibilities during disasters.
	Course name: Applied Mathematics
	Upon completion of the course, students will be able to:
C.201.1	Understand the concepts of Fourier Series in various engineering applications.
C.201.2	Understand the concepts of Fourier Transform in various engineering applications.
C.201.3	Develop the concept of difference equations and Z Transforms.
C.201.4	Construct the numerical solution of algebraic and transcendental equations to obtain the result to required degree of accuracy.
C.201.5	Develop an understanding of numerical integration and differentiation.
C.201.6	Demonstrate various available methods to evaluate initial value problems numerically.
	Course name: Analog Electronics-1
	Upon completion of the course, students will be able to:
C.203.1	Classify the working of various amplifier circuits along with understanding the role of stability parameters.

C.203.2	Analyze the small signal Hybrid and Pi models for amplifier circuits.
C.203.3	Classify and analyze the concepts of positive and negative feedback amplifiers in different configurations.
C.203.4	Develop the understanding of FET and its characteristics.
C.203.5	Demonstrate and examine the working of UJT, SCR, Triac and Diac components and design various types of tuned amplifiers.
C.203.6	Design and construct class-A, class-B, class-C, class-AB, push-pull and complementary push-pull amplifiers.
	Course Name: Switching Theory & Logic Design
	Upon completion of this subject, students will be able to:
C.205.1	Classify various number systems, codes and develop the understanding of Boolean algebra concepts.
C.205.2	Design combinational circuits and compare various logic families.
C.205.3	Illustrate the concept of sequential circuits like flip-flops and registers.
C.205.4	Develop the approach of reducing the state table and model clocked sequential circuits using state equations.
C.205.5	Demonstrate various Finite State Machines and its design.
C.205.6	Design the Algorithmic State Machine and develop the concepts of fault detection and location.
	Course name : Electronic Instruments & Measurement
	Course Outcomes: Upon completion of the course, students will be able to:
C.207.1	Classify errors and apply theory of errors to solve different circuits.
C.207.2	Identify various errors and their impact on the system along with system accuracy, precision and repeatability.
C.207.3	Analyze and experiment with various electronic measuring instruments.
C.207.4	Implement the acquired knowledge to examine voltages, currents for multiranges and will be able to compose different circuits to improve performance.
C.207.5	Design and solve high level circuits to measure various frequencies and time intervals.
C.207.6	Demonstrate and experiment with DSO, operate and analyze signal generators and analyzers, outline the working and understanding of recorders and transducers.
	Course name: Data structure
	Upon completion of the course, the student will be able to:
C.209.1:	Understand the basic concepts of data structures and algorithms.

C.209.2:	Classify elementary data structures such as stack, queue and linked list.
C.209.3:	Analyse the terminology and operations associated with binary tree and its variants.
C.209.4:	Develop the knowledge of advanced tree structures: Multiway tree, B tree and its variants.
C.209.5:	Illustrate graphical representation of various traversal methods.
C.209.6:	Demonstrate various sorting and searching techniques and basic concept of hashing.
	Course Name: Signals &System
	After undergoing the course, the student will be able to:
C.211.1	Characterize signals and systems to understand the LTI systems and to obtain their output using Convolution method.
C.211.2	Analyze time-domain signals in frequency-domain using Fourier series.
C.211.3	Interpret time-domain signals in frequency-domain using Fourier transforms for complex engineering problems.
C.211.4	Demonstrate constraints on ROC for various classes of signals by using Laplace-Transform.
C.211.5	Explain and interpret various classes of signals and systems by using Z-transform
C.211.6	Understand Sampling theorem for the Applications of Digital communication.
	Course name: Applied Mathematics IV
	At the end of the course, a student will be able to:
C.202.1	Classify and understand partial differential equations.
C.202.2	Identify and apply probability theory via Baye's rule and to use method of moments and moment generating function.
C.202.3	Analyze linear and parabolic curve of best fit and to calculate a linear regression for a given data.
C.202.4	Implement statistical test in testing hypothesis on data.
C.202.5	Formulate and solve linear programming problems.
C.202.6	Demonstrate transportation and assignment problems.
	Course name: Computer organization and architecture
	On successful completion of the course, students will be able to:
C.204.1:	Demonstrate and outline the basic computer architecture, concept of bus system, registers, memory, and programming languages and register transfer language.

C.204.2:	Analyze the hardware equivalent of the computer micro-operations with RTL notations and explain 8085 microprocessor.
C.204.3:	Identify the design of simple computer with respect of addressing modes, instruction cycle, register set, input-output configuration and interrupt cycle.
C.204.4:	Implement the knowledge of various memories that are used in computer systems and how data transfer takes place between these memories and internal components of the system.
C.204.5:	Demonstrate the concept of parallelism with Flynn's classification, pipelining at instruction and arithmetic operation level and concept of hardwired and micro-programmed control unit
C.204.6:	Demonstrate the computer arithmetic, IEEE standards and input-output interface.
	Course name: Analog Electronics-II
	At the end of the completion of the course, the student will be able to:
C.204.1	Classify various parameters of differential amplifier using BJT and study its various applications.
C.204.2	Analyze and interpret the various Linear and Non-Linear circuits of Op-amp.
C.204.3	Illustrate the concept of Sine wave generator and understand the conditions for oscillations.
C.204.4	Design various signal generators and active filters using IC 555.
C.204.5	Design and develop the basic circuits of OTA, current conveyer, analog multiplier and PLL-IC.
C.204.6	Develop the understanding of (OTA)-C filters and use it for different applications
	Course Name :Network Analysis and Synthesis
	Upon completion of the course, the student will be able to:
C.206.1	Identify the concept of signals & systems and their classification.
C. 206.2	Illustrate the concept of generalized frequency, circuit representation & their response in terms of generalized frequency.
C. 206.3	Demonstrate the concept of system modeling in terms of differential equations and transient response of R, L, C circuits.
C. 206.4	Analyse two port network parameters and their inter-conversion.
C. 206.5	Identify the concepts of Network functions (driving point and transfer function), minimum phase analysis of Lattice T and Bridged T networks and poles & zeros.
C. 206.6	Classify passive filters, their frequency response and understand characteristic impedance of low pass and high pass prototype section.
	Course Name: Electromagnetic Field Theory
	Upon completion of the course, the student will be able to:

C.210.1	Apply the knowledge of 3-D vector choosing different co-ordinate system and extend in solving electromagnetic field problems.
C. 210.2	Identify and formulate electrostatic and magneto-static problems.
C. 210.3	Classify various problems into static field and harmonically varying fields using Maxwell's equation and Maxwell's wave equations.
C. 210.4	Demonstrate wave propagation in various media and over boundaries to further design suitable sheath for protection from nuclear wave radiation in nuclear plants.
C. 210.5	Analyze various transmission lines and its usage as network elements to develop models.
C. 210.6	Implement Smith chart & stub for designing transmission lines.
	Course name: Communication Systems
	Upon completion of the course, the student will be able to:
C.212.1	Define the basics of Communication System, random variable and random process.
C.212.2	Illustrate the Amplitude Modulation, Frequency spectrum of AM wave, Power relations, need of Modulation,
C.212.3	Identify mathematical representation and freq. spectrum of FM and PM.
C.212.4	Analyze & classify various types of Radio Receivers, Tuned Radio Frequency (TRF) Receiver, Superheterodyne Receiver, Frequency Mixers and AGC Characteristics.
C.212.5	Understand the model of Noise theory, Signal to Noise Ratio, and distinguish between terms like Noise-Figure, Noise Temperature, Calculation of Noise Figure.
C.212.6	Demonstrate the performance measures of communication system.
	Course Name: Communication Skills for Professionals
	Upon completion of the course, student will be able to:
C.301.1	Communicate clearly and concisely, in both written and spoken form at the professional front.
C.301.2	Compose and model different types of business documents in a clear, complete and correct way with organized approach and attention to language, presentation and precision.
C.301.3	Develop and demonstrate proficiency in message construction and utilization by making use of persuasive message delivery skills.
C.301.4	Organize, practice and experiment with appropriate non-verbal communication.
C.301.5	Model presentations that are interesting, concise, enthusiastic and logical.
C.301.6	Identify new trends in the field of Business Communication and analyze its various nuances to discover growing dynamics of communication.
	Course Name: Digital Communication

	Upon completion of the course, the student will be able to:
C.303.1	Define the various line encoding formats and will be competent with the knowledge of sampling, quantization, companding, binary encoding etc used in PCM techniques.
C.303.2	Identify the techniques such as PCM, DPCM, DM, ADM and M-ary waveforms, Duo Binary Pulses.
C.303.3	Develop the understanding of random variables, their PDFs, Mean, Moments, Correlations, PSD, and central limit theorem.
C.303.4	Identify the basics of orthogonal signals, Gram-Schmidt Orthogonalization Procedure, ISI, Eye pattern and study about Prediction Filter, correlation receiver, Matched filter.
C.303.5	Demonstrate the conceptual knowledge about Maximum Likelihood Receiver and Coherent Binary Schemes such as BASK, BFSK, BPSK; Coherent M-ary Schemes and incoherent schemes.
C.303.6	Analyze average probability of error for different modulation schemes and evaluate power spectra of digitally modulated signals.
	Course name: Microprocessors & Microcontrollers
	Upon completion of the course, the student will be able to:
C.305.1	Explain the microprocessor 8085 and its features
C.305.2	Explain the microprocessor 8086 Architecture, compare between 8085 and 8086 architecture.
C.305.3	Implement the instruction set of 8085 and 8086 microprocessors to construct Assembly Language Programs.
C.305.4	Study the various interfacing chips and interface these chips with microprocessor 8086.
C.305.5	Develop simple assembly language programs and design small microprocessor based systems by using various programmable chips.
C.305.6	Understand and apply the instruction set of 8051 Micro-controller for programming.
	Course Name: Control System
	Upon completion of the course, students will be able to:
C.307.1	Identify and derive mathematical models of typical engineering processes using fundamental concepts of control systems.
C.307.2	Illustrate transient and steady state of a system and analyze the working of control components like servomotor, stepper motor using Transfer Function approach, Signal flow graph and block diagrams.
C.307.3	Apply the concept of stability and compensation techniques on a system.
C.307.4	Determine open loop and closed loop stability of given system and implement compensating techniques to design simple system for better performance.
C.307.5	Analyse and determine stability of system using frequency domain approaches (Bode, Nyquist & Polar).

C.307.6	Develop hands-on experience in performing experiments with control problems by using hardware kit in the laboratory.
	Course name: Digital System Design
	Upon completion of the course, the student will be able to:
C.309.1	Understand the basics of VHDL, its designing units and different types of modeling.
C.309.2	Develop new data types, functions, global declaration of object, declare packages, components, files & demonstrate knowledge to model complex problems.
C.309.3	Classify between combinational & sequential circuits and design code convertors & various combinational circuits using all types of modeling.
C.309.4	Implement appropriate techniques to design finite state machines and classify state reduction methods.
C.309.5	Model Synchronous & Asynchronous sequential circuits, hazards free circuit & elaborate some design issues.
C.309.6	Understand the concept of ROM, PLD'S, FPGA and CPLD & use modern tools to implement it.
	Course name: Industrial Management
	Upon completion of the course, the student will be able to:
C.311.1	Understand the concept of Industrial relations, Industrial disputes, Dispute settlement machineries and factory legislation.
C.311.2	Comprehend Trade Unionism and its functioning in India.
C.311.3	Understand various law related to labour
C.311.4	Develop the concept of work study, method study and their application in office work.
C.311.5	Understand the concept of Quality Management and various instruments for quality improvement.
C.311.6	Develop the knowledge about different Control charts and their applicability.
	Course name: Microwave Engineering
	Upon completion of the course, the student will be able to:
C.302.1	Identify appropriate and relevant technique for solving Maxwell's equations, wave equations & their solution, apply boundary conditions.
C.302.2	Apply the fundamental concepts of propagation of waves in rectangular and circular waveguide, their characteristics, modes of propagation and power losses & transmission.
C.302.3	Identify microwave passive components and discuss the concept of Z, Y, and S parameters, and explore them with multiport network.
C.302.4	Examine the constraints and the limitations of conventional tubes, working and operation of microwave tubes (as an amplifier or oscillators)

C.302.5	Understand the principal and working solid state devices, their modes of operation.
C.302.6	Understand the parametric amplifiers and measurement of various parameters of microwave devices.
	Course name: Information Theory and Coding
	Upon completion of the course, student will be able to:
C.304.1	Classify and interpret the concepts of information theory and study various coding methods.
C.304.2	Understand source coding theorem and will develop various efficient source codes.
C.304.3	Implement various coding theorem and understand memoryless channels.
C.304.4	Demonstrate the need for error control coding and study various types of linear block codes.
C.304.5	Demonstrate various cyclic codes and choose an appropriate coding scheme to analyze the input data.
C.304.6	Design and develop the convolution codes and turbo codes.
	Course Name: Digital Signal Processing
	Upon completion of the course, student will be able to:
C.306.1	Illustrate and extend the basic knowledge of DFT, its properties, FFT and its applications
C.306.2	Develop and interpret the design of FIR and IIR filters
C.306.3	Analyze the Frequency Sampling and implement Direct, Cascade, Parallel, and Transposed structures of FIR and IIR filters.
C.306.4	Demonstrate lattice and ladder structure and apply in linear predictor.
C.306.5	Classify and distinguish quantization errors in Digital Signal Processing.
C.306.6	Develop an understanding of Multirate Digital Signal processing
	Course Name: VLSI Design
	Upon completion of the course, student will be able to:
C.308.1	Identify the recent trends in semiconductor technology, and explain its impacts, scaling and performance.
C.308.2	Demonstrate MOS transistor as a switch and its capacitance.
C.308.3	Develop the Layout, Stick diagrams, and analyze the basic combinational circuits, and compare Static and Switching characteristics of inverters.
C.308.4	Develop sequential digital systems using MOS circuits.

C.308.5	Classify different static and dynamic logic and categorize the various dynamic logic schemes.
C.308.6	Illustrate the basic design flow of VLSI Circuits and interpret the low power technologies of VLSI circuits.
	Course name: Data Communication Networks
	Upon completion of the course, the student will able to:
C.310.1	Understand the theoretical base of networks and data communication.
C.310.2	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.
C.310.3	Develop conceptual understanding of design and operation of physical and data link layer, switching techniques, multiple access techniques and apply these techniques and protocols in real world using latest emerging technologies.
C.310.4	Analyze technical standards related to data link layer and network layer of OSI and TCP/IP standard models.
C.310.5	Identify the networking concepts and algorithm and systematically understand their pros and cons in real world networking scenarios.
C.310.6	Analyze the features and operations of various transport and application layer protocols.
	Course name : Antenna and Wave propagation
	Upon completion of the course, the students will able to:
C.314.1	Understand the basic concepts of electromagnetic wave theory, antennas, its radiation mechanism and fundamental parameters of Antenna.
C.314.2	Calculate the basic antenna parameters using standard formulas and implement vector potentials for electric source, magnetic source and far field radiations
C.314.3	Analyze the utilization of theorems (circuit to wave analysis)
C.314.4	Identify antennas and antenna arrays as per their applications and design different types of planar and non-planar antenna.
C.314.5	Illustrate the effect of ground on electromagnetic waves and different modes of wave propagations
C.314.6	Develop an understanding of various Antenna parameters measurement techniques, concept of Anechoic chamber & vector network analyzer
	Course name: Embedded systems ETEC-401
	Upon completion of the course, student will be able to:
C.401.1	Understand and make use of microcontrollers (8051, PIC, ARM) and their features.
C.401.2	Classify various Instructions, addressing modes & make use of Sub Routine Calls, ISRs and Nested Interrupts.
C.401.3	Implement the interfacing of peripheral devices.

C.401.4	Analyze the concepts of various Micro Controller Buses, Bus structures and Bus Arbitrations.
C.401.5	Examine the importance of Embedded Software and get knowledge of RTOS, Multi Tasking Systems.
C.401.6	Demonstrate the concepts of Interrupt Latency, Priority Inversions, Real Time Schedulers and Multi-Tasking.
	Course name: Optoelectronics and Optical Communication
	Upon completion of the course, the student will be able to:
C.403.1	Demonstrate basic knowledge of optical fibers.
C.403.2	Understand attenuation and its various forms
C.403.3	Analyze the propagation in a waveguide and compare various fabrication techniques.
C.403.4	Explain the working of and compare various optical sources and detectors.
C.403.5	Develop the understanding of optical receiver and explain various communication network topologies.
C.403.6	Identify various areas of fiber optics applications.
	Course Name: Wireless Communication
	Upon completion of the course, student will be able to:
C.405.1	Understand the evolution, principles and architecture of cellular systems and various concepts associated with mobility management and network signaling.
C.405.2	Understand multiple access technologies and analyze wireless channel using different Fading Channel Modeling and Diversity Modeling.
C.405.3	Develop an understanding of design and operation of various 2G systems (GSM/GPRS/IS-95/UMTS).
C.405.4	Identify the need of 2.5G systems and develop the concept and working of various technologies associated with Wireless LANs and Mobile IP.
C.405.5	Analyze the features and technical aspects of 3G/4G standards evolved from IMT 2000 vision.
C.405.6	Study basic technical standards related to WLL, WPANs and Global mobile satellite networks.
	Course Name: Radar and Navigation
	Upon completion of the course, the students will be able to:
C.419.1	Understand the basic concept of Radar and applications of various types.
C.419.2	Understand the different Radar Performance factors
C.419.3	Explain the operation of MTI & Pulse doppler Radar

C.419.4	Explain the different type of RADAR transmitter and Know about different microwave devices
C.419.5	Classify the different type of detectors and Receivers noise in RADAR system
C.419.6	Understand concept of direction findings and navigation systems
	Course Name: Database Management Systems
	Upon completion of the course, the student will be able to:
C.425.1	Identify basic idea of Database and related application areas.
C.425.2	Analyze problem related to Modeling of Database using ER diagram and its advanced features.
C.425.3	Analyze and assess the concept of Relational Model, Relations/Table, Tuples, Attributes and Relational Schemas. Students will also get proficient in Relational Algebra.
C.425.4	Design databases using SQL and PL/SQL queries. Students will also be able to modify and convert database tables from one formal from to another.
C.425.5	Develop the knowledge about transaction processing and concurrent execution of transaction in Database.
C.425.6	Design and formulate the advanced concepts in SQL, Application Design and Development and an insight to various Enterprise Database Systems.
	Course Name: Communication Skills for Professionals
	Upon completion of the course, the student will be able to:
C.402.1	Develop an understanding of ethics, morals, values and ethical theories and construct a healthy and ethical professional environment.
C.402.2	Conduct and evaluate ethical discussions with business objectives and personal morality.
C402.3	Acquire the ability to make systematic ethical decisions and to deal with situations of personal value conflict.
C402.4	Understand ethical dimensions with various stakeholders and design an improved motive to govern an organization. (e.g.Government)
C402.5	Perceive and negotiate ethical issues at workplace.
C402.6	Develop team spirit and imagine an ethical work culture and feeling of job satisfaction while proposing an urge to practice ethical codes.
	Course name :Mobile Computing
	Upon completion of the course, the student will be able to:
C.402.1	Identify the concepts of wireless telephony, cellular concept and mobile computing architecture.

C.402.2	Understand the wireless protocols, mobile datalink layer and multiple access techniques for wireless LANs
C.402.3	Identify and explain Mac Layer Management and compare various Wireless Local and Personal Area Systems such as Bluetooth, WPABX, IrDA, ZigBee, RFID, WiMax.
C.402.4	Elaborate the concepts of mobile IP network layer, packet delivery, handover management, location management and route optimization
C.402.5	Classify various routing protocols such as DSDV, DSR, AODV in Network Layer and Mobile Transport Layer and the associated protocols
C.402.6	Analyze and examine the data management issues, data replication for mobile computers ,Wireless Devices and Operating systems: Palm OS, Windows CE, Symbion OS, Android, Mobile Agents
	Course name: Satellite Communication
	Upon completion of the course, student will be able to:
C.404.1	Identify the fundamentals of satellite communication such as evolution & growth of communication satellite, and geometrical calculations, etc.
C.404.2	Analyze satellite link design for uplink and downlink with respect to Earth station and hence evaluate various parameters.
C.404.3	Implement the knowledge of subsystems involved in Space segment and Earth segment.
C.404.4	Demonstrate the knowledge of the different multiple access techniques used to communicate with a satellite such as FDMA, TDMA, DAMA, etc.
C.404.5	Classify the different techniques used for error control in satellite links.
C.404.6	Identify the interconnection of satellite networks with other communication networks such as ISDN, GPS, DTH, etc.
	Course Name: Adhoc wireless network
	Upon completion of the course, the student will be able to:
C.406.1	Identify the issues in Ad Hoc wireless networks and designing a MAC Protocol for the same and summarize and compare various types of MAC protocols.
C.406.2	Analyze and explain issues in designing, goals and classification of Routing algorithm.
C.406.3	Demonstrate issues in designing, goals and classification of Transport Layer Protocol for Ad Hoc wireless networks.
C.406.4	Develop an understanding of sensor network architecture and explain data dissemination, data gathering, MAC protocols for sensor networks.
C.406.5	Analyze next-generation hybrid wireless architectures.
C.406.6	Develop the knowledge about the basics of wireless geolocation architecture with technologies.

	Course name: Next Generation Networks
	Upon completion of the course, student will be able to:
C.428.1	Develop the basic knowledge of NGN and its basic models and compare various protocols along with their applications.
C.428.2	Classify and analyze various IP Networks and LAN Technologies.
C.428.3	Develop an understanding of different networking topologies and study IPv4 and IPv6 technologies.
C.428.4	Classify the different working protocols for networking and illustrate the concept of ATM.
C.428.5	Demonstrate the basic structure of e-commerce, internet connectivity, WAP, UMTS and WIMAX.
C.428.6	Implement the concept of MPLS and multiservice network.