Programme Educational Objectives, Programme Outcomes and Course Outcomes

Year 2019/20

Programme	PEO	PO	Subject	CO
Electronics and Communication Systems	PEO 1: Take an active role and participate in their continuous professional development including graduate studies when appropriate to their career goals PEO 2: Maintain ethical and professional standards in their careers PEO 3: Practice the domain knowledge in the application-oriented discipline	PO 1: An ability to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, and sustainability PO 2: An ability to function on multidisciplinary teams PO 3: An understanding of professional and ethical responsibility PO 4: An ability to communicate effectively PO 5: A recognition of the need for, and an ability to engage in life-long learning PO 6: A knowledge of contemporary issues PO 7: An ability to apply the acquired knowledge in Electronics and Communication Systems	Basic electronics and network analysis	1. Identify and define basic terms and concepts which are needed for electronic science. 2. Recognize basic electronic components used for different electronic functions. 3. Understand basic concepts of DC and AC circuit behavior. 4. Demonstrate the problem-solving skills and proficiency in circuit analysis. 5. Express the basic structure, properties and working principles of P-N junction circuit elements.
			Basic Electronics Lab	1. Explain the concepts and responses of basic electronic circuits. 2. Understand the VI characteristics of semiconductor devices. 3. Develop the ability to design and analyze electronic circuits.
			Network Analysis Lab	1. Test circuits, analyze data and compare measured performance to theory. 2. Demonstrate network theorems using electronic components. 3. Troubleshoot and repair simple electric circuits.
			Electronic Device	1. Acquire a basic knowledge in solid state

			and Circuits	electronics including BJT, FET, MOSFET and Thyristors. 2. Understand the functionality of power supply and regulator circuits. 3. Design and verify the amplifier and oscillator circuits. 4. Develop the ability to analyze electronic circuits using discrete components. 5. Troubleshoot and redesign the electronic circuits.
			Electronic Devices Lanb	1. Understand the working and operational characteristics of Semiconductor devices. 2. Verify practically the response of various special purpose electronic devices. 3. Design and evaluate the rectifiers, power supply and filters.
			Electronic Circuits Lab	1. Learn about biasing of BJTs. 2. Understand the frequency response of amplifiers. 3. Design and evaluate the oscillators.
			Communication Electronics	1. Learn the basic concepts of electromagnetic wave radiation and propagations. 2. Understand important and fundamental antenna engineering parameters and terminology. 3. Understand AM, FM and PM communication

				systems. 4. Apply the essential facts about single sideband modulation for radio communications systems. 5. Design and analyze performance of the Super Heterodyne receiver.
			Integrated Circuits and Instrumentation	1. Understand the various IC fabrication process. 2. Describe the characteristics, linear and nonlinear application of operational amplifier. 3. Develop the ability to analyze and design the Timer and PLL based linear circuits. 4. Understand the concepts and working principles of electronic instruments. 5. Understand the basic manufacturing processes related to electronic products
			Digital Electronics and VHDL	1. Recall the different number systems. 2. Understand the Boolean expressions and Logic gates. 3. Analyze the Combinational building blocks. 4. Gain the capability of implementing various counters, registers and flip-flop based systems. 5. Describe the operation of ADC and DAC circuits.
			Linear Integrated	1. Demonstrate an understanding of

			Circuits Lab	fundamentals of integrated circuits. 2. Design an application with the use of integrated circuits. 3. Learn how to apply troubleshooting and problem solving skills to resolve linear integrated circuit issues.
			Digital Electronic and VHDL Lab	1. Acquire the fundamental knowledge in basic logic gates. 2. Design and analyze digital electronic circuits. 3. Develop the VHDL programming for the digital circuits.
			Microwave and Fibe Optic Communication Systems	1. Understand the theory of microwave and fiber optic communication. 2. Discuss the working of microwave amplifiers, oscillators and devices. 3. Design and analyze the microwave amplifiers, oscillator and devices. 4. Understand the basics of Radar technology. 5. Describe the different characteristics of optical fiber.
			Microcontroller and Applications	1. Recall and apply a basic concept of digital fundamentals to Microcontroller based system 2. Understand the basic concepts and working principles of 8051 Microcontroller 3. Familiarize with the assembly level and embedded C programming using

				8051 4. Analyze the properties of Microcontroller 5. Formulate appropriate computing solution and apply it to the Microcontroller based real-time applications
			Communication Electionics Lab	1. Verify the characteristics of various electronic communication circuits practically. 2. Understand the need and the basics of antenna 3. Apply the knowledge on design techniques and study the performance behavior of communication systems.
			8051 Microcontroller and Application Lab	1. Understand the 8051 microcontroller and its programming with assembly and C. 2. Enrich their knowledge with hands on experiments and project based learning. 3. Troubleshoot interactions between software and hardware.
			Programmable Logic Controller	1. Describe the function of various hardware components of a programmable logic controller. 2. Know the PLC ladder logic and basic programming concepts. 3. Demonstrate the operation of logic circuits by programming in the programmable logic controller. 4. Apply PLC Timers and Counters for the control

				of industrial processes. 5. Use a PLC in order to monitor and control industrial processes.
			Biomedical Instrumentation	1. Understand the basic signals in the field of biomedical and explain the role of bio-potential electrodes. 2. Know the various medical equipments and their technical aspects. 3. Understand medical diagnosis and therapy 4. Analyze the position of biomedical instrumentation in modern hospital care. 5. Explore the application of scientific methods to the complex biomedical signals.
			Internet of Things	1. Understand the concepts of Internet of Things. 2. Understand the basic design principles for IoT. 3. Understand how enterprises plan for IoT deployment in networks. 4. Acquire skills on IoT Systems like Python Packages and Raspberry pi. 5. Implement basic IoT applications on embedded platform.
			Artificial Intelligence	1. Understand Artificial Intelligence (AI) and its basic concepts and methods. 2. Implement agents using search algorithms 3. Explain basic concepts, methods and theories of machine learning

				algorithms. 4. Identify appropriate AI methods to solve a given problem. 5. Implement methods to solve problems using Natural Language Processing.
			Embedded Systems with PIC	1. Understand the fundamentals of embedded systems. 2. Understand the architecture of PIC microcontroller. 3. Write the assemble language and C programs. 4. Use the on-chip peripherals like I/O ports, timers, USART and ADC of PIC MCU. 5. Demonstrate the design and implementation of embedded systems with PIC microcontroller.
			Robotics and Arduino Programming	1. Understand the basic concepts of robots. 2. Identify the drives and end effectors of robot systems. 3. Familiarize with the most common robot sensors. 4. Explore the open source development platform (Arduino). 5. Develop simple robot control systems using Arduino.
			Embedded Systems with PIC Lab	1. Design an embedded system with PIC microcontroller. 2. Trouble shoot microcontroller based electronic systems/products.

				3. Improve employability and entrepreneurship capacity due to knowledge up gradation on recent trends in embedded system design.
			Robotics and Arduino Programming Lab	1. Learn the Arduino programming language and IDE. 2. Construct the circuits necessary for connecting sensors and actuators to the Arduino. 3. Design and construct the robots.
			Modern Communication Systems	1. Understand the basic elements of digital communication systems. 2. Demonstrate an understanding of various digital modulation and demodulation techniques. 3. Analyze the performance of modulation and demodulation techniques in pulse communication. 4. Understand the concepts of wireless transmission, telecommunication systems and satellite communication. 5. Identify and solve basic communication problems.
			Computer Networks	1. Understand the fundamental concepts of computer networking. 2. Enumerate the layers of the OSI model and TCP/IP, and explain the functions of each layer. 3. Identify the different types of network

				topologies and protocols. 4. Identify the different types of network devices and their functions within a network. 5. Expertise in basic protocols of computer networks such as the design, implement and maintenance of individual networks
			Industrial and Power Electronics	1. Acquire knowledge about various power semiconductor devices. 2. Identify basic requirements for power electronics based design applications. 3. Analyze different power converters and control with their applications. 4. Design and develop various power electronic circuits for industrial applications. 5. Troubleshoot power electronics circuits.
			Industrial and Power Electronics Lab	1. Elucidate the basic operation of various power electronic devices. 2. Analyze the response of power electronic circuits. 3. Design, develop and troubleshoot the power control circuits for various industrial applications.
			Modern Communication Systems Lab	1. Know the working of digital communication systems. 2. Identify and analyze the major components used in digital

				communication systems. 3. Design and demonstrate the electronic circuits, to carry out modulation and demodulation experiments.
			Mobile Application Development	1. Describe the basic components of an Android application. 2. Define the lifecycle methods of Android application components. 3. Describe the basics of event handling in Android. 4. Understand the interaction between user interface and underlying application infrastructure. 5. Implement Android applications using an Android Software Development Kit (SDK).
			PC Hardware and Troubleshooting	1. Describe the different hardware components inside and connected to a computer. 2. Understand the requirement of both hardware and software to work for a PC. 3. Learn how display adapters and serial interface works. 4. Install/connect associated peripherals. 5. Diagnose and troubleshoot microcomputer systems hardware and software, and other Peripheral equipments.
			Embedded Systems	1. Understand the fundamentals of

				embedded systems, different components of 8051 microcontroller. 2. Know the instruction set and addressing modes of 8051. 3. Write and execute assembly language programs and embedded C programs for the given applications. 4. Familiar with programming environment (IDE) used to develop embedded systems. 5. Interface microcontroller with external hardware circuitry/Peripheral.
			Robotics and Applications	1. Understand the basic concepts and types of robots. 2. Identify the drives and end effectors of robot systems. 3. Familiarize with the most common robot sensors. 4. Explore the open source development platform (Arduino). 5. Develop simple robot control systems using Arduino.
			PC Hardware	1. Describe the different hardware components inside and connected to a computer 2. Understand the requirements of computer hardware and software to work. 3. Learn how display adapters and serial interface cards works 4. Install/connect

				associated peripherals 5. Diagnose and troubleshoot microcomputer systems hardware and software, and other Peripheral equipment
			PC Hardware, Installation and Troubleshooting	1. Understand the basic computer system and its components. 2. Identify and analyze the computer hardware. 3. Learn how display adapters and serial interface works. 4. Install, configure, and remove software and hardware. 5. Diagnose and troubleshoot microcomputer systems hardware and software, and other Peripheral equipments.
Biotechnology		1. An ability to meet desired needs within realistic constraints such as economic, 2. environmental, social, political, ethical, health and safety, and sustainability. 3. An ability to function on multidisciplinary teams. 4. An understanding of professional and ethical responsibility. 5. An ability to	Biochemistry	1. To understand the structure elements of carbohydrates, proteins and lipids in the biological system 2. To understand the functional groups and associated reactions of carbohydrates, proteins and lipids in the biological system 3. To understand the basic structural features and the role of nucleic acids and vitamins 4. To understand the basic structural features and the role of minerals and hormones

		communicate effectively 6. A recognition of the need for and an ability to engage in life-long learning. **7.** A knowledge of contemporary issues 8. An ability to acquaint with fundamentals of various Microbiological courses and thus acquire the capability of applying them for advanced learning and also for conduct of experiment. 9. An ability to equip with knowledge and skills necessary for entry-level placement in both biotechnology as well as in Software concerns and for entering into higher education.	Lab in Cell Biology and Biochemistry	1. To categorize the cells and its division and to discriminate the types of cells using dyes and centrifugation methods. 2. To analyze the carbohydrates and Proteins by qualitative methods. 3. To analyze the carbohydrates, proteins and nucleic acids by quantitative methods. 4. To understand the working principles of Chromatography.
			Microbiology	1. To understand the history of microbiology, biography of eminent scientists, structures and basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes and organelles 2. To understand how these microbes are stained and the methods of staining along with the various microscopes used to visualize them. 3. To learn the basic principles of various methods of sterilization and culture medias. 4. To understand the taxonomy and

				classification of microbes.
			Genetics	1. To provide knowledge on the basic laws governing the pattern of inheritance familiarize the students with the basic concepts and principles of nucleic acids in prokaryotic and eukaryotic organisms 2. To understand DNA as genetic material and replication of genome. 3. To provide knowledge on mutation studies and its expression 4. To Understand the allelic frequency and Genetic counseling.
			Lab in Microbiology and Genetics	1. To understand the isolation and culturing of microorganisms. Culturing of microorganisms. 2. To understand the microbial staining and metabolic profiling. 3. To understand mutants and mutagenic agents. 4. To understand the chromosome and gene.
			Immunology	1. To familiarize the students with the immune system ,their structure and classification, genetic

				control of antibody production 2. To understand the mechanism of activation in hypersensitive immune reaction 3. To understand the role of the immune molecules in infectious diseases, autoimmunity and cancer 4. The students will be able to identify the cellular and molecular basis of immune responsiveness.
			Bioprocess Technology	1. To Understand Basic knowledge of industrial process - screening of strain improvement and Inoculum development. 2. To Understand design of fermenter and Fermentation process. 3. To analyses the various types of fermenter. 4. To apply the large-scale fermentation process and product production and acquire information on downstream process.
			Lab in Immunology and Bioprocess Technology	1. To find out the antigen and antibody reaction 2. To perform quantify the antigen and antibody concentration through

				titration. 3. To study of enzyme production with optimum parameters and separation. 4. To quantify the alcoholic content in wine and biomass production through SCP
			rDNA Technology and Bioethics	1. To understand the tools of genetic engineering 2. To analyze the applications of genetic engineering 3. To describe the methods of gene transfer. 4. To discriminate the concepts of IPR, patenting and biosafety in Biotechnology and its regulatory bodies.
			Lab in rDNA Technology	1. To isolate the DNA from various sources. 2. To perform PCR, restriction, digestion and ligation experiments. 3. To separate the protein mixture using SDS-PAGE. 4. To understand about the different blotting techniques and conjugation and transformation
			Introduction to Bioinformatics	1. To understand Computational Biology, databases and Role of Internet 2. To Understand the DNA, Protein sequence methods

				and Sequence Analysis 3. To Understand Sequence similarity searches and Alignment 4. To Understand the Concept of Phylogenetics
			Environmental Biotechnology	1. To understand the history of environmental biotechnology 2. To understand the important of bio fertilizer and vermiculture 3. To discuss the treatment of waste water in industry level 4. To understand the law of environment and impact on institutions
			Medical Biotechnology	1. To understand the structural feature of Metabolic Disorders 2. To analyze the Genetic diseases and biological importance 3. To discriminate the Degenerative disease, Industrial Toxicants, Metal Toxicants, Ageing 4. To impart the analysis of DNA Sequencing, Nanomedicine the concept of gene therapy and tissue engineering
			Ayurveda	1. To understand the fundamental concepts of Ayurveda and its

				relation with microbiology. 2. To understand the ayurvedic terms of food and food safety. 3. To remember the genetic, immunological and pharmacogenomics concepts of Ayurveda. 4. To remember the types and regulations in ayurvedic medicine
			Lab in Environmental and Medical Biotechnology	1. To gain Knowledge on Quantification of Substance in water effluent 2. To gain Knowledge on Serum analysis. 3. To understand the experiments related to genetic engineering. 4. To give a practical hands-on experience related to techniques used in r – DNA technology
			Bionanotechnology	1. To understand the essential features of biology and nanotechnology that are converging to create the new area of bionanotechnology 2. To recognize the structural and functional principles of bionanotechnology 3. To employ bionanomaterials for analysis and sensing techniques 4. To apprehend and

				explain the biomedical applications of nanotechnology
			Plant Biotechnology	1. To understand the genome organization and synthetic seeds 2. To understand the conventional methods in plant breeding and the concept of molecular markers 3. To apply different media formulations in different techniques 4. To apply transformation techniques for developing resistance in plants
			Lab in Plant and Animal Biotechnology	1. To gain Knowledge on plants and its significance. 2. To understand the concepts of tissue culture and its needs. 3. To understand the experiments related to haploid culture and its need. 4. To give a practical hands-on experience related to techniques used in animal biotechnology
			Lab in Biocomputing	1. To retrieve the Biological databases 2. To retrieve the sequence similarity searches. – Blast 3. To analysis the structure of DNA and protein 4. To Visualize the DNA and Protein structure

			Animal Biotechnology	1. To understand the Fundamentals and basic concepts in Animal cell culture 2. To apply the technique of developing cell culture and assays for identifying the viability 3. To analyze the organ culture and vaccine production 4. To analyze the basic concepts of Developmental biology, assisted reproductive technology and Transgenic lower and higher animals
			Molecular Diagnosis	1. To understand the importance of diagnosis of disease through gene analysis 2. To understand DNA sequencing methods and identification of diseases 3. To understand the basis of hereditary and prenatal diseases and diagnosis 4. To understand and analyze the application of real time PCR and DNA based tests for identification of genetic disorders
Mathematics		1. An ability to meet desired needs within realistic constraints such as economic,	Classical Algebra	1. Able to define different kind of matrices and solve theory of equations. 2. Able to define the concepts of series and

		2. environmental, social, political, ethical, health and safety, and sustainability. 3. An ability to function on multidisciplinary teams. 4. An understanding of professional and ethical responsibility. 5. An ability to communicate effectively 6. A recognition of the need for and an ability to engage in life-long learning. 7. A knowledge of contemporary issues 8. An ability to identify, reflect upon, evaluate, integrate, and apply different types of information and knowledge to form conclusions based on quantitative information.		some of tests. 3. Able to summarize the value of a given infinite series using Binomial and Multinomial theorems, expansion of log series and relating functions. 4. Able to develop solutions using summation of series.
			Statistics for Mathematics I	1. Able to know the basic concepts of probability and random variables. 2. Able to identify the nature of the variables and its expectation 3. Able to classify the discrete and continuous distribution
			Practical – Minitab	1. Able to understand the basic statistical concept, Diagrams and statistical measures of central tendency using Minitab 2. Able to demonstrate basic probability axis and rules and how to calculate generating random samples using Minitab 3. Able to develop the future values based on observations using Minitab software. 4. Able to classify the nature of the variables to compare and interpret them to take business

				decision.
			Calculus	1. Able to understand the concept of successive and partial differentiation using various methods and rules. 2. Able to compare the double and triple integrals and with based on applications. 3. Able to understand the basic mathematical concepts of Curvature and also evaluate the p-r equation, chord and radius of curvature 4. Able to identify the change of variables in double, triple integrals and transformations in polar co-ordinates.
			Statistics for Mathematics II	1. Able to know the basic ideas about Estimations and inference 2. Able to differentiate situations according to sample size 3. Able to identify the nature of the variables and interpret them to take decision
			Practical – Statistical Package	1. Able to understand the data conversion process for future analysis 2. Able to understand the basics operations of SPSS for Descriptive statistics 3. Able to apply the

				SPSS for analyses of inferential statistics
			Analytical Geometry of Three Dimension & Vector Calculus	1. Able to construct sphere equation and study their properties. 2. Able to develop 3D objects like Cone, Cylinder and central quadrics. 3. Able to solve problems using differential operators. 4. Able to reduce different forms of Integrals.
			Differential Equations And Laplace Transforms	1. Able to recall the fundamental concepts of Ordinary Differential Equations in order to find the solution. 2. Able to choose the most suitable method to solve linear differential equations. 3. Able to make use of appropriate method to derive solutions of partial differential equations. 4. Able to learn the Laplace and inverse Laplace technique to translate models, interpret results, and make predictions within the original context.
			Practical Geogebra	1. Able to recall the fundamental concepts of linear equations and quadratic equations. 2. Able to visualize the polynomials, absolute values and sine

				waves. 3. Able to solve the simple problems by utilizing appropriate code to envisage the result.
			Introduction to GeoGebra	1. Able to find general term of series and powers of trigonometry functions. 2. Able to analyze the result of tests and infer inverse hyperbolic functions and logarithm of complex quantities. 3. Able to find the sum of trigonometrical series including Gregory's series and Euler's series. 4. Able to understand the concept of fourier series and find the fourier series for various functions.
			Abstract Algebra	1. Able to understand the classification of groups, knowledge of fundamental results. 2. Able to understand the basic concept of permutation to Cayley's theorem. 3. Able to analyze and solve mathematical problems. 4. Able to study the importance of ideal as a fundamental object.
			Practical – Latex	1. Able to make use of different mathematical symbols and

				formation of tables. 2. Able to typeset different equations with complete alignment. 3. Able to learn the method of importing pictures within the original context.
			Numerical Methods	1. Able to apply numerical methods to solve algebraic and transcendental equations in the given range. 2. Able to solve numerical integration and differentiation to evaluate the given function at a given value. 3. Able to find the numerical solutions for ordinary and partial differential equations using various methods.
			Special Functions	1. To understand the concept of Beta and Gamma Functions. 2. To obtain the knowledge of regular singular points and Frobenius series solution for some special equations. 3. To obtain the knowledge of indicial equations and some properties of series solutions of Bessel's functions. 4. To know about Legendre Equation and Legendre Polynomial.

			Number Theory & Cryptography	1. Able to Outline the Basic concepts of Number Theory 2. Able to apply some Number Theory concepts into Cryptography 3. Able to understand some concepts of Number Theory. 4. Able to apply Number Theory concepts to Code or Decode.
			Practical – Matlab	1. Able to recall the fundamental concepts of Differential Equations in order to find the solution. 2. Able to recall the numerical methods and choose the most suitable method to solve differential equations. 3. Able to solve the real life problem by utilizing appropriate and interpret the result.
			Discrete Mathematics	1. Able to understand the concepts of Mathematical Logics. 2. Able to construct the Disjunctive and Conjunctive normal forms and the theory of inference for the statement calculus. 3. Able to relate the concept of relation and function to interpret issues in different areas of mathematics. 4. Able to develop

				lattices, Sub lattices, Special lattices, graph and Matrix representation of Graphs.
			Fuzzy Logic and Neural Networks	1. Able to Understand the concepts of Crisp sets, Fuzzy sets, Crisp Relation and Fuzzy relation 2. Able to develop the knowledge about Fuzzy logic, Fuzzy quantifiers, Fuzzy inference and defuzzification methods 3. Able to know a deep knowledge about the Fuzzy Automata and Fuzzy Neural Networks 4. Able to understand the methods of decision making, fuzzy ranking and fuzzy linear programming problem.
			Mechanics	1. Understanding of facts and ideas by statics and dynamics concept. 2. Able to solve the statics problems using acquired knowledge. 3. Able to make inferences and find evidences to support generalizations.
			Real Analysis	1. Able to define the basic concepts of real numbers 2. Able to solve the real life problems

				involving set theory and its elements 3. Able to solve the problems on limits and Continuous function 4. Able to construct and communicate algebraic ideas in the language of the mathematician.
			Linear Algebra	1. Able to define the basic concepts of Vector spaces and Span of a Set 2. Able to understand the basis and dimensions also construct problems on Matrices 3. Able to understand Inner product space and construct problems on Orthogonality 4. Able to solve Bilinear forms and reduce quadratic forms into diagonal forms
			Complex Analysis	1. Able to define the basic concepts of complex ,continuous and analytic functions . 2. Able to analyze the bilinear transformations . 3. Able to demonstrate complex integration, series and expansions 4. Able to interpret the residues and relate the definite integrals .
			Operations Research	1. ble to Solve linear Programming Problem

				2. Able to find the solution for transportation, Assignment Problems and find the best replacement 3. Able to study the queue length, waiting time can be predicted and find the Critical Path.
			Applied Mechanics	1. Able to remember the concept of frictions and its applications 2. Able to understand the concept of rectilinear motion and collision of two bodies 3. Able to apply the concept of fluids and liquids in hydrostatics
			Research Methods and Statistics	1. Understand the underlying forces leading to a particular trend in the time series data points and the competing merits of different approaches to index number problems and methods for dealing with quality change and new goods. 2. Understand the comprehensive survey of the field of social demography the scientific study of population. 3. Understand the issues and principles of Design of Experiments. 4. Understand the data that is often ordinal,

				meaning it does not rely on numbers, but rather a ranking or order of sorts.
			Practical – R – Programming	1. Able to create any form of statistics and data manipulation 2. Able to understand the advanced graphical representation of data 3. Able to apply the R programming for analysing the inferential statistics
Biotechnology/ Microbiology		1. An ability to meet desired needs within realistic constraints such as economic, 2. environmental, social, political, ethical, health and safety, and sustainability. 3. An ability to function on multidisciplinary teams. 4. An understanding of professional and ethical responsibility. 5. An ability to communicate effectively 6. A recognition of the need for and an ability to engage in life-long learning. **7.** A knowledge of contemporary issues 8. An ability to acquaint with	Cell Biology	1. To understand the structures and basic components of prokaryotic and eukaryotic cells. 2. To understand the structure of cell wall and transport mechanisms of the cell. 3. To remember the concepts of intracellular organelles, cell division, mitosis and meiosis. 4. To remember the concepts of cell signaling and its coupled receptors.

		fundamentals of various Microbiological courses and thus acquire the capability of applying them for advanced learning and also for conduct of experiment. An ability to equip with knowledge and skills necessary for entry-level placement in both biotechnology as well as in Software concerns and for entering into higher education.		
			Fundamentals of Microbiology	1. To understand the History of Microbiology. 2. To understand the different types of Microscopy and the Microbial staining methods. 3. To understand the Sterilization and culture Techniques. 4. To understand the various microbial culturing techniques and methods for the Maintenance and Preservation of culture
			Lab in Cell Biology,	1. To categorize different types of cell present in the given

			Biochemistry and Microbiology	sample 2. To analyze the carbohydrates, lipids and proteins by qualitatively 3. To identify the type of bacteria using different staining techniques 4. To identify the microorganisms present in the given sample.
			Microbial Diversity	1. To Understand the Microbial Diversity. 2. To Understand the Microbial Classification system 3. To Understand the General structure, classification growth and reproduction algae, Fungi 4. To Understand the General structure, classification growth and reproduction Protozoa, and Virus.
			Microbial Physiology and Metabolism	1. To understand the ubiquitous nature of microbes, their structure, function, growth and regulatory mechanisms 2. To understand concept of integrative rules of biochemistry and genetics governing biological systems leading to the microbial physiology and metabolism 3. To know the importance of

				microbial physiology in identification of organism 4. To understand that microorganisms can be correctly differentiated based on the variation in the genome content
			Lab in Microbial Physiology and Metabolism and Bioanalytical Techniques	1. To understand the knowledge about measurement of microbial growth and factors influencing the microbial growth. 2. To gain knowledge on various biochemical reactions 3. To gain knowledge on different hydrolysis tests. 4. To understand the protocol for isolating DNA and microscopic examination of algae
			Immunology	1. To familiarize the students with the immune system, their structure and classification, genetic control of antibody production. 2. To understand the mechanism of activation in hypersensitive immune reaction. 3. To understand the role of the immune molecules in infectious diseases, autoimmunity and cancer. 4. The students will be

				able to identify the cellular and molecular basis of immune responsiveness.
			Microbial Genetics	To Understand the chemistry and molecular structure of DNA,RNA and concept of genetic in microbes To Understand the microbial DNA structurally and genetically. The mechanism of mutation and repair in DNA To Understand the prokaryotic gene structure and the mechanisms controlling gene expression To Understand the mechanism of mutation DNA repair and various DNA transformation methods.
			Lab in Immunology and Microbial Genetics	To gain Knowledge on identification of blood group, various pathological conditions and immunodiffusion techniques. To understand partial purification of antibodies, antigen preparation and induction of Lac Operon To gain knowledge on drug resistant mutants and conjugation To gain knowledge on bacterial transformation and conjugation
			rDNA Technology and Bioethics	To understand the tools of genetic engineering To analyze the applications of genetic engineering To describe the methods of gene transfer. To discriminate the concepts of IPR, patenting and

				biosafety in Biotechnology and its regulatory bodies.
			Lab in rDNA technology	To isolate the DNA from various sources To perform PCR, restriction, digestion and ligation experiments. To separate the protein mixture using SDS-PAGE. To understand about the different blotting techniques and conjugation and transformation
			Introduction to Bioinformatics	To understand Computational Biology, databases and Role of Internet To Understand the DNA, Protein sequence methods and Sequence Analysis To Understand Sequence similarity searches and Alignment To Understand the Concept of Phylogenetics
			Environmental Agricultural Microbiology	To understand the various types of air borne infections, air pollutions To analyze the quality of water, indicator organisms and identification of contaminants To remember the soil microbiology, bio- geo cycle, recycling and biodegradation To apply the environmental institutions, policies, acts and laws
			Food and Industrial Microbiology	To understand the principles of food preservation, contamination and spoilage To analyze the biology of food borne infection and good manufacture practices To remember the types of strain improvement,

				fermenters and production of various metabolites To apply the quality assurance and sanitation in bio industry
			Ayurveda	To understand the fundamental concepts of Ayurveda and its relation with microbiology. To understand the ayurvedic terms of food and food safety. To remember the genetic, immunological and pharmacogenomics concepts of Ayurveda. To remember the types and regulations in ayurvedic medicine
			Lab in Environmental, Agricultural, Food and Industrial Microbiology	To understand the knowledge about nitrogen fixers and phosphate solublizers. To gain knowledge about the role of microbiology in food industry To gain knowledge on application of microbiology in industries. To understand the protocol for isolating algae and biodegrating
			Biananotechnology	To understand the essential features of biology and nanotechnology that are converging to create the new area of bionanotechnology To recognize the structural and functional principles of bionanotechnology To employ bionanomaterials for analysis and sensing techniques To apprehend and explain the biomedical applications of nanotechnology

			Medical Bacteriology and Mycology	To understand sources and types of microbial infections To gain knowledge on the bacterial infections, their diagnosis and treatments To gain knowledge on the fungal infections, their diagnosis and treatments To understand the role of antibiotics in curing the bacterial and fungal infections
			Lab in Medical Microbiology	To understand the Knowledge about collection and transport of clinical specimens. To gain knowledge on detection of bacterial and Fungal and protozoan Infections. To gain knowledge on infections and Sensitivity of antibiotics. To understand the protocol of viral cultivation
			Lab in Biocomputing	To retrieve the Biological databases To retrieve the sequence similarity searches. – Blast To analysis the structure of DNA and protein To Visualize the DNA and Protein structure
			Molecular Diagonsis	To understand the importance of diagnosis of disease through gene analysis To understand DNA sequencing methods and identification of diseases To understand the basis of hereditary and prenatal diseases and diagnosis To understand and analyze the application of real time PCR and DNA based tests

				for identification of genetic disorders
			Medical Virology and Parasitology	To understand the various types of viral infections and host interactions To understand the biology of the virus, life cycles, epidemiology, clinical features, laboratory diagnosis, treatment and prevention of human viral infections. To understand the parasitic infections of humans especially those caused by protozoa and helminthes. To understand the biology of the parasites, life cycles, epidemiology, clinical features, laboratory diagnosis, treatment and prevention of human parasitic infections.

Psychology		• An ability to gain knowledge in theoretical approaches and its application in the sub fields of psychology. • An ability to function on multidisciplinary teams. • An understanding of professional and ethical responsibility. • An ability to communicate effectively • A recognition of the need and an ability to engage in life-long learning. • A knowledge of contemporary issues • An ability to identify the problem, formulate case and its associated intervention in the area of clinical, counseling, educational and industrial	General Psychology I	To acquire knowledge about the origin and different subfields within psychology. To acquire knowledge about the emphasis on visual and auditory sensation and perception. To understand the concept of perception To acquire knowledge about types of learning and schedules of reinforcement To understand the concept of memory and forgetting with its associated causes.

		settings.	Developmental Psychology I	To acquire knowledge about nature and theories of development To gain detailed knowledge about the prenatal development To gain knowledge about the physical development of new born and reflex action. To acquire knowledge about cognitive and language development in children To acquire knowledge about emotional development during childhood.

			Biological Psychology	Develop an insight into the biological behavior of human being Gain knowledge about nervous system and its connection with the environment Acquire competence on the brain anatomy. Learn about the association between the brain mechanism and the muscular movements Analyze the Movement disorders and its treatment plans
			Experimental Psychology I	Learn to conduct experiments to understand the concept of sensation and its function Learn to conduct experiments to understand the conception of perception and to measure the same Learn to conduct experiments to measure distraction, divisibility, span of attention and reaction time. Learn to conduct experiments to understand the process of learning and to measure the same.

			General Psychology II	To understand the theories and concepts of motivation. To understand the concept of emotion, its theories and relation management. To understand the concept of intelligence and also to become proficient in intelligence testing. To understand the concept problem solving, concept formation and critical thinking. To become familiar to various theories in personality.
			Developmental Psycholgoy II	1. To gain knowledge the about late childhood and its speech, emotional and moral development. 2. To gain knowledge and skill to understand the stage of adolescence and its associated problems. 3. To understand the developmental task in adulthood and as well as their adjustment issues in various areas of life. 4. To understand the developmental task in middle age and as well as their adjustment issues in various areas of life.

				5. To understand the developmental task in old age and as well as their adjustment issues in various areas of life.
			Experimental Psychology II	1. Learn to conduct experiments to understand the concept of memory and its process. 2. Learn to conduct experiments to understand the concepts of motivation and emotions. 3. Learn to conduct experiments to measure level of intelligence 4. Learn to conduct experiments to understand the process of problem solving and to identify the decision making style.

				5. Learn to conduct experiments to measure the personality types.
			Psycholgo ical Statistics	1. To gain knowledge the about statistics and its importance in psychological application. 2. To gain knowledge and skill in collecting data and its tabulation 3. To understand the concept of skewness and the Purpose of Measures of Central Tendency 4. To understand the concept of variability and its application in psychology 5. To understand the purpose and

				assumptions of Analysis of variance and its computation.
Business Administration (Computer Application) (Clayton)		1. An ability to meet desired needs within realistic constraints such as economic, 2. environmental, social, political, ethical, health and safety, and sustainability. 3. An ability to function on multidisciplinary teams. 4. An understanding of professional and ethical responsibility. 5. An ability to communicate	English Composition I	1. Demonstrate Knowledge of the subject matter and engage in writing as a process. 2. Demonstrate Communication Skills by engaging in the collaborative, social aspects of writing 3. Demonstrate Critical Thinking Skills in effectively analyzing concepts and successfully applying these skills in writing clearly for a specified audience and purpose

		effectively 6. A recognition of the need for and an ability to engage in life-long learning. 7. A knowledge of contemporary issues 8. Ability to apply the knowledge of business concepts and the different functions of management integrated with systems for the better outcomes in the industry.	Spoken Communication	1. Understand the ability of conversation and speaking to a public. 2. Identify the various nuances of speaking skills 3. Discern the speaking skills can be acquired through constant practice. 4. Inherit the strategies to be a better communicator 5. Facilitate the learners to master the public speaking skills
			College Algebra	1. Able to understand the solvable situation in graphing functions, polynomial & rational expressions. 2. Able to apply the concepts of algebra such as Expressions, Transforming Expressions, and Equations 3. Able to solve equations and inequalities.

			Modern World History	1. Demonstrate Knowledge to help in building the characters, Working as a group gives an opportunity to bring out various talents in the same project. 2. It will be given to the knowledge to bring out their original ideas. This will encourage the talent to put forth their creativity and innovation. 3. Demonstrate the various topic knowledge, understanding the topic, improve the innovation and thinking ability
			Art of the Modern World	1. Demonstrate Knowledge of the subject matter and history of art: major works, issues, movements 2. Demonstrate Communication Skills by orally critiquing the works of others, including historical works. 3. Demonstrate Critical Thinking Skills in effectively analyzing art concepts and successfully applying these skills in aesthetic judgments.

			English Composition II	1. To relate students the importance and responsibility of a Writer and to analyze the technical usages of designing a written document. 2. Illustrates the writer's depth of learning in acquisition of Genre and research matters. 3. Analyzes the various process of documentation in writing a Research paper. The MLA hand style of writing and APA style of writing are explored for imbibing the quality analysis of Research. 4. A featuring analysis of the style matters that are used to enhance the sentence constructions in writing and presentation skills. 5. Summarizes the assured importance of grammatical conventions and other details necessary for research output.

			Macroeconomics	1. Relate and be able to explain the economic models 2. Understand about macroeconomics and find the difference between macroeconomics and microeconomics 3. Understand about savings, investment spending and financial system 4. Learn about monetary and fiscal policy
			Introductory Statistics	1. Recall the fundamental statistics and illustrate basic probability 2. Infer the future values based on observations 3. Apply inferential statistics to make managerial decision
			Introductory Biology I	1. Understand about the major biomolecules such as carbohydrate, protein, lipid and nucleic acid includes DNA and RNA. 2. Understand about cellular metabolic

				reactions and the role of enzymes in metabolism. 3. Understand the biological cycles such as electron transport chain, kreb cycle, photosynthesis (light and dark reactions), energy production and sharing. 4. Understand the process of cell division, gene to proteins and about stem cells
			Introductory Biology Lab I	1. Analyze the principle of DNA Extraction 2. Analyze the Microscope parts, Biological Chemistry, Diffusion and Osmosis, Enzyme Activity, Photosynthesis, Alcoholic Fermentation 3. Analyze the mechanism of cell cycle and how the cell divides and to find the crosses using medelian genetics checker board for the crosses

			Principles of Microeconomics	1. Relate and be able to explain the economic concepts 2. Illustrate the economic models and to express economic relationships to predict the consequences of changes in relevant variables 3. Summarize the microeconomic concepts and variables, examine and analyze consumer decision making, firm theory, market structures, labor markets and basic international trade. 4. Infer economics of pollution and to explain the positive and negative externalities

			Advanced Computer Application	1. Create, format and enhance a power point presentation 2. Create tables, records and work with queries, forms and reports. 3. Create worksheets and work with formulas, functions, charts and validate data
			World Literature II – Modern	1. Analyze and evaluate texts that reflect diverse genres, time periods, and cultures. 2. Analyze the ways in which language and literature are related to class, culture, ethnicity, gender, histories, race, and sexuality 3. Interpret texts from various perspectives by using close readings supported by textual evidence, and informed by critical theory. 4. Make the learners to

				inherit and to understand the rhetorical contexts. 5. To Conduct effective research and writing as it relates to the field of English studies, by using a variety of technical and information sources.
			US History to 1877	1. Understand the colonial life, culture and the impact of colonization. 2. Know about the American Revolution and gain knowledge about the federalist era. 3. Analyze the vibrant growth of nationalism in America 4. Comprehend America in terms of religion, reforms and to know about the War of Union in American history. 5. Evoke the Agrarian revolt and various urban developments that took place in America.

			Critical Trends and Issues in Recent World History	1. Explore contemporary world history from multiple perspectives, including economic, political, social and cultural history, To develop critical reading skills. 2. Evaluate contemporary nonfiction, news and documentary sources. 3. Identify and describe basic chronologies of U.S. and world history. 4. Identify and evaluate conflicting historical interpretations of events and personalities
			Principles of Financial Accounting	1. Describe and prepare financial statements. 2. Analyse the effect of business transactions on financial statements and to understand the accrual basis of accounting. 3. Understand how to recognize, value, maintain and dispose various forms of assets and liabilities. 4. Evaluate company's performance using various tools and techniques of financial statement analysis

			Principles of Managerial Accounting	1. Understand the concepts of Cash flow and ratio 2. Understand the concepts of Managerial accounting, Job order costing and Process costing. Explain the Manufacturing process and Financial statement 3. Understand the Activity based costing and Cost volume profit methods 4. Understand the concepts of Budgeting and Budgetary control 5. Understand the Standard Costs & Balanced Scorecard and Incremental Analysis & Capital Budgeting

			Critical Thinking	1. Understand the basics of Critical Thinking, Arguments, Premises, and Conclusions, 2. Remember the Fallacies of Presumption, Ambiguity, and Illicit Transference 3. Analyze the Symbols and Translation, Truth Functions & Tables 4. Analyze the Argument Forms and Fallacies
			Legal Environment of Business	1. Relate and be able to explain the legal system 2. Illustrate the torts, criminal laws, agreement and consideration 3. Summarize the contracts, breach and remedies. 4. Understand about partnership and sole partnership.

			Principles of Chemistry I	1. Acquire fundamental knowledge on internal energy 2. Differentiate exothermic/endothermic processes 3. Understand the basics of calorimetry 4. Learn the important laws and reactions of gas
			Principles of Chemistry I – Laboratory	1. Be aware of safety measures in a chemistry lab and understand the concepts of density and Avagadro's number. 2. Get hands on training on chemical synthesis apart from instrumental techniques. 3. Get a clear-cut idea on reactions of copper, volumetric titrations and VSEPR theory.
Business Administration (Logistics)		PO 1: An ability to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, and sustainability.	Fundamentals of Logistics	1. To explain the logistics concept in general with regard to cost efficiency 2. To explain the customer service, outsourcing and procurement concept. 3. To explain the forces driving globalization, financial issues and

		PO 2: An ability to function on multidisciplinary teams. PO 3: An understanding of professional and ethical responsibility. PO 4: An ability to communicate effectively PO 5: A recognition of the need for, and an ability to engage in life-long learning. PO 6: A knowledge of contemporary issues. PO 7: Ability to apply the knowledge of business concepts and the different functions of management integrated with systems for the better outcomes in the industry.		mode of transportation 4. To summarize the warehouse concept, e-commerce, 5. To define the EXIM, rail logistics and liquid logistics

			Principles of Management	1. To help students to understand the basic principles and concept of management. 2. To understand decision making planning and process 3. Able to understand directing, staffing in an organization 4. To understand the principle of organization structure, centralization and decentralization. 5. To understand corporate social responsibility, SWOT analysis of an organization
			Material Management	1. To help students to understand basic principles and concepts of material management 2. To understand the purchasing concept and store procedure documentation 3. Able to understand Material Requirement planning and concept of Bills of Materials

				4. To develop students in Quality Control, Inventory Control and cost Reduction techniques. 5. To understand material handling concept
			Warehousing and Distribution centre Operations	1. To explain the systems concept of warehouse organization 2. To summarize the procedure for arranging of goods, store location 3. To Outline apply the knowledge of quality check in packaging 4. To summarize the channel of distribution in inbound and outbound operation 5. To define the safety rules and procedures to be observed in warehouse management.

			Materials Management – Practical	1. To know the different types of material handling equipment 2. To understand the concepts of record keeping, maintenance operation 3. To learn how to prepare job sheet and report to the superior 4. To learn about safety measure and procedures
			Warehousing Management – Practical	1. To know the Basics of warehousing 2. To understand the order level in warehousing 3. To learn about the dispatch activities in warehouse. 4. To know about legal and regulatory level in cargo 5. To know about the packaging used in different industry.

			Freight Forwarding (Ocean & Air Cargo)	1. To develop competencies and knowledge of students to become freight forwarding professionals 2. To orient students in the field of Logistic 3. To help Students to understand freight forwarding 4. To help Students to understand the cargo handling and its basic regulation 5. To enable the students to understand the documentation and procedure of freight forward
			Forecasting and Inventory Management	1. 1.To explain the forecasting methods and demand forecasting 2. 2. To explain the concept of sales

				and operation planning and forecasting technique 3. To explain the purpose of inventory and types of goods. 4. To summarize the codification concept and economic order quantity 5. To define the production policy on inventory level and inventory management system.
			Surface Transportation, Courier, Express & Parcel	1. To know the surface transportation Model 2. To develop competencies and knowledge of students to become transportation professionals 3. To orient students in the field of Logistics 4. To help Students to understand surface transportation including road and rail transport 5. To enable the

				students to understand the customer management
			Surface Transportation – Practical	1.To known the land transport carriers. 2. To understand the traffic rules inside warehouse premises To understand road signs, Good practices of driving and safety procedures To Identify routes and transit rules To Use various types of temperature controlled carriers and transport temperature
			MIS for Logistics	1. Demonstrate the frame process design strategies of database technology 2.To Outline apply the knowledge of information technology and strategic planning 3.To summarize the functional areas and compliance systems. 4.To define the quality aspects of business operations management and

			International Logistics Management	IT application 1. To Explain the evolution of international logistics management 2. Demonstrate the frame process of marketing in ILM 3. To Outline apply the knowledge of transport functionalities modals 4. To summarize the containerization procedures 5. To define the operations management international commercial documents
			Logistics Network Design	1. 1.To Explain the components of logistics network and models of network design 2. Demonstrate the key issues of network design and determining

				the best distribution channels 3. To enumerate the data required for network design, transportation rates and warehousing costs 4. To summarize the strategic decisions in terms of warehouses and reduction of warehouse cost 5. To define the data collection, aggregation, data validation and optimization
			Port Terminal Logistics	1. To Know the concept of types of Ports 2. To learn about Terminals and its operators and the need of Privatization 3. To summarize Export and Import Cycles 4. To learn about

				Port equipment 5. To Know about Port Tariff and Safety Procedures
			Retail Logistics and E-Commerce	1. To Know the concept of Retail Logistics and Supply Chain contours 2. To learn about Assembling and Labeling the documents 3. To Outline the E Commerce concepts 4. To summarize reverse logistics 5. To Know about E Payment system and E Business Models
			Liner Logistics	1. To Know the concept of basic liner trades such as trade routes, ship layout 2. To learn about Cargoes and Cargo equipments. 3. To outline growth in world trade

				unitization 4. To learn about Bill of Lading and other documentation 5. To know about exchange of goods transfer from country to country.
			Logistics Network Design - Practical	1. To know the Logistics Network Model 2. To understand the optimal number, location, and size of warehouses Work 3. To understand optimal sourcing strategy and distribution channels 4. To know the transportation rates and warehousing costs 5. To create the steps of network design (Data Collection,

			Freight Forwarding-Practical	Data aggregation, Data Validation and Optimization) 1. 1.To Learn how toprepared document related to Carrier Customer Clearnace 2. To examine and verify customs related documents 3. To learn how to prepare packaging requirement during shipment 4. To know the transportation basic regulations
Computer Science – Post Graduate		1. An ability to meet desired needs within realistic constraints such as economic, 2. environmental, social, political, ethical, health and safety, and sustainability. 3. An ability to function on multidisciplinary teams. 4. An understanding of professional and ethical responsibility.	Advanced Java Programming	1. To understand the advanced OOPS concepts. 2. To understand the concepts of I/O streaming and GUI based applications. 3. To analyse the advanced networking concepts in java 4. To apply the concept of servlet methods and interfaces in application development. 5. To apply the concepts of JSP in web application development

		5. An ability to communicate effectively 6. A recognition of the need for and an ability to engage in life-long learning. **7.** A knowledge of contemporary issues 8. An ability to apply knowledge of Domain logics, Networking, Quality Engineering, User Interface conception and Data Analytics.	Advanced Operating System	1. Analyze the structure of OS and basic architectural components involved in OS design 2. Analyze and design the applications to run in parallel either using process or thread models of different OS 3. Analyze the various device and resource management techniques for timesharing and distributed systems 4. Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system 5. Interpret the mechanisms adopted for file sharing in distributed Applications

			Analysis and Design of algorithms	1. To analyze different scenarios for running time of algorithms using asymptotic notations and Design using Recursion. 2. To apply divide and conquer strategy for design of various algorithms. 3. To describe and apply dynamic-programming approach for designing graph and matrix based algorithms. 4. To apply decrease and conquer strategy for design of various algorithms 5. To understand the concept of backtracking for traversal and search algorithms
			Advanced Java Programming Lab	1. To understand the concepts of I/O streaming and GUI based applications. 2. To analyse the advanced networking concepts in java 3. To apply the concept of servlet methods and interfaces in application development. 4. To apply the concepts of JSP in web application development

			Distributed Computing	1. Understand the strength and weakness of computing 2. Understand the threads and APIs. 3. Understand the Group Communication 4. Understand the RMI 5. Understand the services of CORBA.
			Cryptography and Network Security	1. Apply various encryption techniques 2. Understand block cipher and Data Encryption Standard 3. Apply key exchange and hash algorithms 4. Understand digital signature 5. Understand Email security and firewalls
			Virtualization and Cloud	1. Understand the concepts of cloud and the types of services 2. Understand how the cloud servers are abstracted and virtualized and Google cloud services 3. Understand how Iaas and Paas services are offered by Amazon and Microsoft cloud services 4. Understand cloud security and service oriented architecture 5. Use backup solutions, media and streaming, working with mobile devices.

			Theory of Computation and Compilers	1. Analysis of different phases of compiler. 2. Understand the construction of parsers and symbol table. 3. Understand the Intermediate Code Generation for different statements. 4. esign a compiler that apply code optimization and code generation concepts.
			Cryptography and Network Security Using NS3	1. Apply substitution techniques 2. Apply understand transposition techniques 3. Apply encryption algorithms 4. Simulate communication of nodes in the network
			Computer Graphics	1. To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations. 2. To familiar with techniques of clipping, three dimensional graphics and three dimensional transformations.

				3. To prepare for activities involving in design, development and testing of modeling, rendering, shading and animation.
			Digital Image Processing	1. Understand fundamental steps in digital image processing 2. Understand spatial and frequency domain filtering 3. Analyze image restoration and various filtering techniques 4. Analyze various compression methods 5. Understand thresholding and segmentation
			Python Programming	1. To develop python programs using python data types 2. To apply the concept of python data structures 3. To create networks and web programs.
			Image Processing with Scilab	1. Apply Image Enhancement 2. Apply Image Transformation 3. Apply color image

				manipulations
			Python Programming Lab	1. To develop python programs using python data types 2. To apply the concept of python data structures
			Artificial Intelligence	1. Understand the basic concepts of artificial intelligence, intelligent agents and search strategies 2. Understand heuristic functions, constraint satisfaction problems. 3. Understand the logical agents and first order logic with application. 4. Understand the concepts of forward chaining, backward chaining and planning with blocks world planning application 5. Understand the concepts Robotics ,Robotic software Architectures – Application
			Introduction to Internet of Things	1. Explain what is IoT 2. Analyze the “things” in IoT 3. Understand Web based and Application protocols

				of IoT 4. Analyze Big Data Tools and technology 5. Analyze Use Case Scenario of Industrial IoT
			Computer Graphics Lab	1. Understand practical fundamental of line drawing, circle drawing, polygon drawing and curve drawing. 2. Implement the concepts of different type of geometric transformation of objects in 2D and 3D. 3. Do the practical implementation of modeling, rendering, viewing of objects in 2D and 3D. 4. Get knowledge about clipping algorithms.
			Software Lab	1. Understand when to use each of the Microsoft Office programs to create professional business documents. 2. Use Microsoft Office programs to create personal and/or business documents following current professional and/or industry standards. 3. Perform presentation skills 4. Analyze and apply the features of Access 5. Implement the concept of email

			RDBMS and ORACLE	1. Work out the basic commands in SQL 2. Explore the data management and retrieval 3. Implement the operations in functions, grouping and subqueries 4. Understand the basics of PL/SQL 5. Write a functions or procedures in PL/SQL
			RDBMS and Oracle Lab	1. Work out the basic commands in SQL 2. Perform DML operations in SQL 3. Apply the grouping functions and orderby clause 4. Create view and report 5. Create PL/SQL procedure and trigger
Computer Technology – Post Graduate			Advanced Java Programming	1. To understand the advanced OOPS concepts. 2. To understand the concepts of I/O streaming and GUI

				based applications. 3. To analyze the advanced networking concepts in java 4. To apply the concept of servlet methods and interfaces in application development. 5. To apply the concepts of JSP in web application development.
			Advanced Computer Architecture	1. Understand the architecture of computer and CPU operational concepts 2. Understand Instruction types and Addressing Modes 3. Understand Fixed Point Arithmetic and Floating Point Arithmetic 4. Understand Instruction Prefetch and Memory Interleaving 5. Understand I/O Techniques and Architecture of Intel Pentium Processor
			Data Mining and Warehousing	1. To understand the basic concepts in Knowledge Discovery & mining techniques. 2. To apply suitable visualization techniques for data analysis. 3. To apply

				classification techniques for data analysis. 4. To apply mining techniques by association rule for analyzing the data 5. Relate OLAP tools to design data warehouse systems.
			Practical-Advanced Java Programming Lab	1. To understand the concepts of I/O streaming and GUI based applications. 2. To analyse the advanced networking concepts in java 3. To apply the concept of servlet methods and interfaces in application development. 4. To apply the concepts of JSP in web application development.
			Structures and Algorithms	1. To choose appropriate data structure as applied to specified problem definition. 2. To handle operations

				like searching, insertion, deletion, traversing Mechanism etc. on various data structures. 3. To solve problems using greedy method. 4. To solve problems of graph. 5. To solve problems using backtracking and branch bound.
			Cryptography and Network Security	1. Apply various encryption techniques 2. Understand block cipher and Data Encryption Standard 3. Apply key exchange and hash algorithms 4. Understand digital signature 5. Understand Email security and firewalls
			Virtualization and Cloud	1. Understand the concepts of cloud and the types of services 2. Understand how the cloud servers are abstracted and virtualized and Google cloud services 3. How Iaas and Paas services are offered by Amazon and Microsoft cloud

				services 4. Understand cloud security and service oriented architecture 5. Use backup solutions, media and streaming, working with mobile devices.
			Software Project Management	1. Understand project plan and project evaluation 2. Analyze various process models and software effort estimation 3. Produce an activity plan and create a critical path for a project 4. Identify risk factors and monitor the progress of projects 5. Analyze factors that influence people's behavior in a project environment
			Practical - Cryptography and Network Security Using NS3	1. Apply substitution techniques 2. Apply understand transposition techniques 3. Apply encryption algorithms 4. Simulate communication of nodes in the network

			DSE I: Wireless Communication Technologies (Mobile Communication Systems)	1. Understand Wireless Transmission, Multiplexing and Modulation 2. Analyze various Medium Access Control and telecommunication systems 3. Understand satellite systems, digital audio and video broadcasting 4. Understand radio transmission and Bluetooth 5. Apply wireless markup language
			Digital Image Processing	1. Understand fundamental steps in digital image processing 2. Understand spatial and frequency domain filtering 3. Analyze image restoration and various filtering techniques 4. Analyze various compression methods 5. Understand thresholding and segmentation
			Python Programming	1. To develop python programs using python data types 2. Able to apply the concept of python data structures

				3. Able to create networks and web programs .
			Practical - Image Processing with Scilab	1. Apply Image Enhancement 2. Apply Image Transformation 3. Apply color image manipulations
			Practical- Python Programming Lab	1. To develop python programs using python data types 2. Able to apply the concept of python data structures
			Practical- Wireless Communication Technologies- Android Programming Lab	1. Apply various controls in android IDE to develop small applications
			Artificial Intelligence	1. Understand the basic concepts of artificial intelligence, intelligent agents and search strategies 2. Understand heuristic

				functions, constraint satisfaction problems. 3. Understand the logical agents and first order logic with application. 4. Understand the concepts of forward chaining, backward chaining and planning with blocks world planning application 5. Understand the concepts Robotics ,Robotic software Architectures – Application
			Introduction to Internet of Things	1. Explain what is IoT 2. Analyze the “things” in IoT 3. Understand Web based and Application protocols of IoT 4. Analyze Big Data Tools and technology 5. Analyze Use Case Scenario of Industrial IoT
Information Technology – Post Graduate			Advanced Java Programming	1. To understand the advanced OOPS concepts. 2. To understand the concepts of I/O streaming and GUI based applications. 3. To analyze the advanced networking concepts in java 4. To apply the concept of servlet methods and interfaces in application

				development. 5. To apply the concepts of JSP in web application development.
			Software Engineering	1. Identify the different Process models. 2. Concepts of requirements engineering and Analysis Modeling. 3. Apply systematic procedure for software design and deployment. 4. Apply the various estimation models in project management. 5. Compare and contrast the various testing and maintenance
			Data Mining and Warehousing	1. To understand the basic concepts in Knowledge Discovery & mining techniques. 2. To apply suitable visualization techniques for data analysis. 3. To apply classification techniques for data analysis. 4. To apply mining techniques by association rule for analyzing the data 5. Relate OLAP tools to design data warehouse systems.

			Advanced Java Programming Lab	1. To understand the concepts of I/O streaming and GUI based applications. 2. To analyse the advanced networking concepts in java 3. To apply the concept of servlet methods and interfaces in application development. 4. To apply the concepts of JSP in web application development.
			Data Structures and Algorithms	1. To choose appropriate data structure as applied to specified problem definition. 2. To handle operations like searching, insertion, deletion, traversing Mechanism etc. on various data

				structures. 3. To solve problems using greedy method. 4. To solve problems of graph. 5. To solve problems using backtracking and branch bound.
			Cryptography and Network Security	1. Apply various encryption techniques 2. Understand block cipher and Data Encryption Standard 3. Apply key exchange and hash algorithms 4. Understand digital signature 5. Understand Email security and firewalls
			Virtualization and Cloud	1. Understand the concepts of cloud and the types of services 2. Understand how the cloud servers are abstracted and virtualized and Google cloud services 3. How Iaas and Paas services are offered by Amazon and Microsoft cloud services 4. Understand cloud security and service oriented architecture 5. Use backup solutions, media and streaming, working with mobile

				devices.
			Theory of Computation and Compilers	1. Analysis of different phases of compiler. 2. Understand the construction of parsers and symbol table 3. Understand the intermediate code generation for different statements. 4. esign a compiler that apply code optimization and code generation concepts
			Cryptography and Network Security Using NS3	1. Apply substitution techniques 2. Apply understand transposition techniques 3. Apply encryption algorithms 4. Simulate communication of nodes in the network

			Data Base Technologies(Oracle)	1. Understand the SELECT and SORT Queries 2. Solve queries using set operators and sub queries. 3. Write PL/SQL programs using control structures. 4. Retrieve multiple rows using cursors in PL/SQL 5. Secure data using Trigger concepts
			Digital Image Processing	1. Understand fundamental steps in digital image processing 2. Understand spatial and frequency domain filtering 3. Analyze image restoration and various filtering techniques 4. Analyze various compression methods 5. Understand thresholding and segmentation
			Python Programming	1. To develop python programs using python data types 2. Able to apply the

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			Image Processing with Scilab	1. Apply Image Enhancement 2. Apply Image Transformation 3. Apply color image manipulations
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			Data Base Technologies-(Oracle Lab)	1. Understand the SELECT and SORT Queries 2. Solve queries using set operators and sub queries. 3. Write PL/SQL programs using control structures. 4. Retrieve multiple rows using cursors in

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			Introduction to Internet of Things	1. Explain what is IoT 2. Analyze the “things” in IoT 3. Understand Web based and Application protocols of IoT 4. Analyze Big Data Tools and technology 5. Analyze Use Case Scenario of Industrial IoT