Department of Information Science and Engineering

Program Outcomes and Course Outcomes

Program Outcomes (POs)
PO1: Apply knowledge of computing fundamentals, computing specialization, mathematics and domain knowledge to provide IT solutions.
PO2: Identify, analyze and solve IT problems using fundamental principles of mathematics and computing sciences.
PO3: Design, Develop and evaluate software solutions to meet societal and environmental concerns.
PO4: Conduct investigations of complex problems using research based knowledge and methods to provide valid conclusions.
PO5: Select and apply appropriate techniques and modern tools for complex computing activities.
PO6: Practice and follow professional ethics and cyber regulations.
PO7: Involve in life-long learning for continual development as an IT professional.
PO8: Apply and demonstrate computing and management principles to manage projects in multidisciplinary environments by involving in different roles.
PO9: Comprehend& write effective reports and make quality presentations.
PO10: Understand and assess the impact of IT solutions on socio-environmental issues.
PO11: Work collaboratively as a member or leader in multidisciplinary teams.
PO12: Identify potential business opportunities and innovate to create value to the society and seize that opportunity.

Program Specific Outcomes (PSOs)
PSO1: Graduates will be able to understand and apply technical knowledge and skills to solve real time problems in the field of information science and engineering.
PSO2: Graduates can analyze, design and implement the innovative ideas to model real world's problems using programming and algorithms to provide solutions with Ethical and management principles.

Course Outcomes:

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 18-Scheme
Course Name : CALCULUS AND LINEAR ALGEBRA		**Course Code: 18MAT11**
CO1	Apply the knowledge of calcus to solve problems related of polar curves and its applications in determining the betness of curve	
CO2	Learn the notion of partial differentiation to calculate the rates of changes of multivariate functions and solve problems related to composite functions and Jacobians.	
CO3	Apply the concept of change of order of integration and varaiables to evaluate multiple integrals and their usage in computiong the area and volumes.	
CO4	Solve first order linear/nonlinear differential equation analytically using standard methods.	
CO5	Make use of matrix theory for solving system of linear equations and compute eigenvalues and eigenvectors required for matrix diagonalization process..	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 18-Scheme
Course Name : ENGINEERING PHYSICS		**Course Code: 18PHY12**
CO1	Understand various types of oscillations and their implications, the role of Shock waves in various fields and Recognize the elastic properties of materials for engineering applicatio	
CO2	Realize the interrelation between time varying electric field and magnetic field, the trans nature of the EM waves and their role in optical fiber communication.).	
CO3	Compute Eigen values, Eigen functions, momentum of Atomic and subatomic particles using Time independent 1-D Schrodinger's wave equation.	
CO4	Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields	
CO5	Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 18-Scheme
Course Name : BASIC ELECTRICAL ENGINEERING		**Course Code: 18ELE13**
CO1	Analyse D.C and A.C circuits.	
CO2	Explain the principle of operation and construction of single phase transformers.	
CO3	Explain the principle of operation and construction of DC machines and synchronous machines.	
CO4	Explain the principle of operation and construction of three phase induction motors.	
CO5	Discuss concepts of electrical wiring, circuit protecting devices and earthing	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 18-Scheme
Course Name : CIVIL ENGINEERING AND MECHANICS		Course Code: 18CIV14
CO1	Mention the applications of various fields of Civil Engineering. Compute the resultant of given force system subjected to various loads	
CO2	Comprehend the action of Forces, Moments and other loads on systems of rigid bodies and compute the reactive forces that develop as a result of the external loads.	
CO3	Locate the Centroid and compute the Moment of Inertia of regular and built-up sections.	
CO4	Express the relationship between the motion of bodies and analyze the bodies in motion.	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 18-Scheme
Course Name : Engineering Graphics		Course Code: 18EGDL15
CO1	Prepare engineering drawings as per BIS conventions mentioned in the relevant codes.	
CO2	Produce computer generated drawings using CAD software.	
CO3	Use the knowledge of orthographic projections to represent engineering information/concepts and present the same in the form of drawings	
CO4	Develop isometric drawings of simple objects reading the orthographic projections of thos objects.	
CO5	Convert pictorial and isometric views of simple objects to orthographic	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : ENGINEERING PHYSICS LABORATORY		Course Code: 18PHYL16
CO1	Apprehend the concepts of interference of light, diffraction of light, Fermi energy and magnetic effect of current	
CO2	Understand the principles of operations of optical fibers and semiconductor devices su Photodiode, and NPN transistor using simple circuits	
CO3	Determine elastic moduli and moment of inertia of given materials with the help of sugg procedures	
CO4	Recognize the resonance concept and its practical applications	
CO5	Understand the importance of measurement procedure, honest recording and representin data, reproduction of final results	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 18-Scheme
Course Name : BASIC ELECTRICAL ENGINEERING LABORATORY		Course Code: 18ELEL17
CO1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory.	
CO2	Compare power factor of lamps.	
CO3	Determine impedance of an electrical circuit and power consumed in a 3 phase load.	
CO4	Determine earth resistance and understand two way and three way control of lamps.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : ADVANCED CALCULUS AND NUMERICAL METHODS		Course Code: 18CHE22
CO1	Illustrate the applications of multivariate calculus to understand the solenoidal and irrational vectors and also exhibit the inter dependence of line, surface and volume integrals.	
CO2	Demonstrate various physical models through higher order differential equations and solv linear ordinary differential equations.	
CO3	Construct a variety of partial differential equations and solution by exact methods/method ration of variables.	
CO4	Explain the applications of infinite series and obtain series solution of ordinary differenti equations.	
CO5	Apply the knowledge of numerical methods in the modeling of various physical and engi ng phenomena.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : ENGINEERING CHEMISTRY		Course Code: 18CHE22
CO1	Use of free energy in equilibria, rationalize bulk properties and processes using nodynamic system.	
CO2	Causes & effects of corrosion of metals and control of corrosion. Modification of surface metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating	
CO3	Production & consumption of energy for industrialization of country and living standar Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utiliz lar energy for different useful forms of energy.	
CO4	Environmental pollution, waste management and water chemistry.	
CO5	Different techniques of instrumental methods of analysis. Fundamental principles of Nano materials.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : C PROGRAMMING FOR PROBLEM SOLVING		Course Code: 18CPS23
CO1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc.	
CO2	Construct a programming solution to the given problem using C.	
CO3	Identify and correct the syntax and logical errors in C programs.	
CO4	Modularize the given problem using functions and structures.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : C PROGRAMMING FOR PROBLEM SOLVING		Course Code: 18CPS23
CO1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc.	
CO2	Construct a programming solution to the given problem using C.	
CO3	Identify and correct the syntax and logical errors in C programs.	
CO4	Modularize the given problem using functions and structures.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : ELEMENTS OF MECHANICAL ENGINEERING		Course Code: 18MC25
CO1	Identify different sources of energy and their conversion process. Explain the wo principle of hydraulic turbines, pumps, IC engines and refrigeration.	
CO2	Recognize various metal joining processes and power transmission elements.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : ENGINEERING CHEMISTRY LABORATORY		Course Code: 18CHEL26
CO1	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.	
CO2	Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.	
CO3	To be familiar in the use of CGI and Perl programs for different types of server side applications.	
CO4	Design and implement user interactive dynamic web based applications.	

CO5	Evaluate the given wed application and enhance it using latest web technologies.

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : C PROGRAMMING LABORATORY		**Course Code: 18CPL27**
CO1	Write flowcharts, algorithms and programs.	
CO2	Familirize the processes of debugging and execution. Implement basics of C programmir	
CO3	Illustrate solutions to the laboratory programs	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 18-Scheme
Course Name : TECHNICAL ENGLISH - 2		**Course Code: 18EGH28**
CO1	Identify common errors in spoken and written communication	
CO2	Get similiarized with English vocabulary and language proficiency	
CO3	prove nature and style of sensible writing and acquire employment and workplace communication skills	
CO4	nprove their Technical Communication Skills through Technical Reading and Writing practices	
CO5	Perform well in campus recruitment, engineering and all other general	

Year/ Semester: 2nd Year /3rd Semester		Scheme of Study: 18-Scheme
Course Name : TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES		**Course Code: 18MAT31**
CO1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.	
CO2	Demonstrate Fourier series to study the behaviour of periodic functions and their applicati stecommunications, digital signal processing and field theory.	

CO3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function ıg in wave and heat propagation, signals and systems.
CO4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
CO5	Determine the externals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

Year/ Semester: 2nd Year /3rd Semester	**Scheme of Study: 18-Scheme**
Course Name : DATA STRUCTURES AND APPLICATIONS	**Course Code: 18CS32**
CO1	Use different types of data structures, operations and algorithms
CO2	Apply searching and sorting operations on files
CO3	Use stack, Queue, Lists, Trees and Graphs in problem solving
CO4	Implement all data structures in a high-level language for problem solving.

Year/ Semester: 2nd Year /3rd Semester	**Scheme of Study: 18-Scheme**
Course Name : ANALOG AND DIGITAL ELECTRONICS	**Course Code: 18CS33**
CO1	Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp.
CO2	Explain the basic principles of A/D and D/A conversion circuits and develop the same.
CO3	Simplify digital circuits using Karnaugh Map , and Quine-McClusky Methods
CO4	Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types.

CO5	Develop simple HDL programs

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 18-Scheme
Course Name : COMPUTER ORGANIZATION	**Course Code: 18CS34**
CO1	Explain the basic organization of a computer system.
CO2	Demonstrate functioning of different sub systems, such as processor, Input/output,and memory.
CO3	Illustrate hardwired control and micro programmed control, pipelining, embedded and other computing systems.
CO4	Design and analyse simple arithmetic and logical units.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 18-Scheme
Course Name : SOFTWARE ENGINEERING	**Course Code: 18CS35**
CO1	Design a software system, component, or process to meet desired needs within realistic constraints
CO2	Assess professional and ethical responsibility
CO3	Function on multi-disciplinary teams
CO4	Use the techniques, skills, and modern engineering tools necessary for engineering practice

CO5	Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems

Year/ Semester: 2nd Year /3rd Semester		**Scheme of Study: 18-Scheme**
Course Name : DISCRETE MATHEMATICAL STRUCTURES		**Course Code: 18CS36**
CO1	Use propositional and predicate logic in knowledge representation and truth verification.	
CO2	Demonstrate the application of discrete structures in different fields of computer science	
CO3	Solve problems using recurrence relations and generating functions	
CO4	Application of different mathematical proofs techniques in proving theorems in the courses.	
CO5	Compare graphs, trees and their applications.	

Year/ Semester: 2nd Year /3rd Semester		**Scheme of Study: 18-Scheme**
Course Name : ANALOG AND DIGITAL ELECTRONICS LABORATORY		**Course Code: 18CSL37**
CO1	Use appropriate design equations / methods to design the given circuit.	
CO2	Examine and verify the design of both analog and digital circuits using simulators.	
CO3	Make us of electronic components, ICs, instruments and tools for design and testing of circuits	

CO4	Compile a laboratory journal which includes; aim, tool/instruments/software/components used, design equations used and designs, schematics, program listing, procedure followed, relevant theory, results as graphs and tables, interpreting and concluding the findings.

Year/ Semester: 2nd Year /3rd Semester	**Scheme of Study: 2018-20**
Course Name : DATA STRUCTURES LABORATORY	**Course Code: 18CSL38**
CO1	Analyze and Compare various linear and non-linear data structures
CO2	Code, debug and demonstrate the working nature of different types of data structures and their applications
CO3	Implement, analyze and evaluate the searching and sorting algorithms
CO4	Choose the appropriate data structure for solving real world problems

Year/ Semester: 2nd Year /3rd Semester	**Scheme of Study: 18-Scheme**
Course Name : ADDITIONAL MATHEMATICS – I	**Course Code: 18MATDIP31**
CO1	Apply concepts of complex numbers and vector algebra to analyze the problems arising in related area.
CO2	Use derivatives and partial derivatives to calculate rate of change of multivariate functions.
CO3	Analyze position, velocity and acceleration in two and three dimensions of vector valued functions.
CO4	Learn techniques of integration including the evaluation of double and triple integrals.

CO5	Identify and solve first order ordinary differential equations.

Year/ Semester: 2nd t Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS		**Course Code: 18MAT41**
CO1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.	
CO2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flov lization and image processing.	
CO3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.	
CO4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.	
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.	

Year/ Semester: 2nd Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : DESIGN AND ANALYSIS OF ALGORITHMS		**Course Code: 18CS42**
CO1	Describe computational solution to well known problems like searching, sorting etc.	
CO2	Estimate the computational complexity of different algorithms.	
CO3	Devise an algorithm using appropriate design strategies for problem solving.	

Year/ Semester: 2nd Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : OPERATING SYSTEMS		Course Code: 18CS43
CO1	Demonstrate need for OS and different types of OS	
CO2	Apply suitable techniques for management of different resources	
CO3	processor, memory, storage and file system commands	
CO4	Realize the different concepts of OS in platform of usage through case studies	

Year/ Semester: 2nd Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : MICROCONTROLLER AND EMBEDDED SYSTEMS		Course Code: 18CS44
CO1	Describe the architectural features and instructions of ARM microcontroller	
CO2	Apply the knowledge gained for Programming ARM for different applications.	
CO3	Interface external devices and I/O with ARM microcontroller.	
CO4	Interpret the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.	
CO5	Develop the hardware /software co-design and firmware design approaches. Demonstrate the need of real time operating system for embedded system applications	

Year/ Semester: 2nd Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : Object Oriented Concepts		Course Code: 18CS45
CO1	Explain the object-oriented concepts and JAVA.	
CO2	Develop computer programs to solve real world problems in Java.	
CO3	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings.	

Year/ Semester: 2nd Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : DATA COMMUNICATION		Course Code: 18CS46
CO1	Explain the various components of data communication.	
CO2	Explain the fundamentals of digital communication and switching	
CO3	Compare and contrast data link layer protocols.	
CO4	Summarize IEEE 802.xx standards.	

Year/ Semester: 2nd t Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY		Course Code: 18CSL47
CO1	Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming,	
CO2	implement a variety of algorithms such assorting, graph related, combinatorial, etc., in a high level language.	
CO3	Analyze and compare the performance of algorithms using language features.	
CO4	Apply and implement learned algorithm design techniques and data structuresto solve real-world problems.	

Year/ Semester: 2nd Year /4th Semester		Scheme of Study: 18-Scheme
Course Name : MICROCONTROLLER AND EMBEDDED SYSTEMS LABORATORY		Course Code: 18CSL48
CO1	Develop and test program using ARM7TDMI/LPC2148	

CO2	Conduct the following experiments on an ARM7TDMI/LPC2148 evaluation board using ation version of Embedded 'C' & Keil Uvision-4 tool/compiler.

Year/ Semester: 2nd Year /4th Semester	Scheme of Study: 18-Scheme
Course Name : **ADDITIONAL MATHEMATICS – II**	**Course Code: 18MATDIP41**
CO1	Solve systems of linear equations using matrix algebra.
CO2	Apply the knowledge of numerical methods in modelling and solving engineering problems.
CO3	Make use of analytical methods to solve higher order differential equations
CO4	Classify partial differential equations and solve them by exact methods.
CO5	Apply elementary probability theory and solve related problems.

Year/ Semester: 3rd Year /5th Semester	Scheme of Study: 18-Scheme
Course Name: **MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY**	**Course Code: 18CS51**
CO1	Define management, organization, entrepreneur, planning, staffing, ERP and outline their importance in entrepreneurship
CO2	Utilize the resources available effectively through ERP
CO3	Make use of IPRs and institutional support in entrepreneurship

Year/ Semester: 3rd Year /5th Semester	Scheme of Study: 18-Scheme
Course Name: **COMPUTER NETWORKS AND SECURITY**	**Course Code: 18CS52**
CO1	Explain principles of application layer protocol
CO2	Recognize transport layer services and infer UDP and TCP protocols
CO3	Classify routers, IP and Routing Algorithms in network layer

CO4	Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard
CO5	Describe Multimedia Networking and Network Management

Year/ Semester: 3rd t Year /5th Semester	**Scheme of Study: 18-Scheme**
Course Name: DATABASE MANAGEMENT SYSTEM	**Course Code: 18CS53**
CO1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS
CO2	Use Structured Query Language (SQL) for database manipulation.
CO3	Design and build simple database systems
CO4	Develop application to interact with databases.

Year/ Semester: 3rd Year /5th Semester	**Scheme of Study: 18-Scheme**
Course Name: AUTOMATA THEORY AND COMPUTABILITY	**Course Code: 18CS54**
CO1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation
CO2	Learn how to translate between different models of Computation (e.g., Deterministic and N ministic and Software models).
CO3	Design Grammars and Automata (recognizers) for different language classes and become rledgeable about restricted models of Computation (Regular, Context Free) and their relativ rs
CO4	Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness.
CO5	Classify a problem with respect to different models of Computation.

Year/ Semester: 3rd Year /5th Semester	**Scheme of Study: 18-Scheme**
Course Name: APPLICATION DEVELOPMENT USING PYTHON	**Course Code: 18CS55**
CO1	Demonstrate proficiency in handling of loops and creation of functions.
CO2	Identify the methods to create and manipulate lists, tuples and dictionaries
CO3	Disover the commonly used operations involving regular expressions and file system.
CO4	Interpret the concepts of Object-Oriented Programming as used in Python
CO5	Determine the need for scraping websites and working with CSV, JSON and other file form

Year/ Semester: 3rd Year /5th Semester		Scheme of Study: 18-Scheme
Course Name: UNIX PROGRAMMING		Course Code: 18CS56
CO1	Explain Unix Architecture, File system and use of Basic Command	
CO2	Illustrate Shell Programming and to write Shell Scripts	
CO3	Categorize, compare and make use of Unix System Calls	
CO4	Build an application/service over a Unix system.	

Year/ Semester: 3rd Year /5th Semester		Scheme of Study: 18-Scheme
Course Name: COMPUTER NETWORK LABORATORY		Course Code: 18CSL57
CO1	Analyze and Compare various networking protocols.	
CO2	Demonstrate the working of different concepts of networking	
CO3	Analyze and evaluate networking protocols in NS2 / NS3 and JAVA programming.	

Year/ Semester: 3rd Year /5th Semester		Scheme of Study: 18-Scheme
Course Name: DBMS LABORATORY WITH MINI PROJECT		Course Code: 18CSL58
CO1	Create, Update and query on the database.	
CO2	Demonstrate the working of different concepts of DBMS	
CO3	Implement, analyze and evaluate the project developed for an application	

Year/ Semester: 3rd Year /5th Semester		Scheme of Study: 18-Scheme
Course Name: ENVIRONMENTAL STUDIES		Course Code: 18CV59
CO1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,	
CO2	Develop critical thinking and/or observation skills, and apply them to the analysis of a prol estion related to the environment	
CO3	Demonstrate ecology knowledge of a complex relationship between biotic and abiotic Components.	

CO4	Apply their ecological knowledge to illustrate and graph a problem and describe the realit managers face when dealing with complex issues.

Year/ Semester: 3rd Year /6th Semester		**Scheme of Study: 18-Scheme**
Course Name: FILE STRUCTURES		**Course Code: 18CS61**
CO1	Choose appropriate file structure for storage representation.	
CO2	Identify a suitable sorting technique to arrange the data.	
CO3	Select suitable indexing and hashing techniques for better performance to a given problem	

Year/ Semester: 3rd Year /6th Semester		**Scheme of Study: 18-Scheme**
Course Name: SOFTWARE TESTING		**Course Code: 18CS62**
CO1	Derive test cases for any given problem	
CO2	Compare the different testing techniques.	
CO3	Classify the problem into suitable testing model	
CO4	Apply the appropriate technique for the design of flow graph.	
CO5	Create appropriate document for the software artefact.	

Year/ Semester: 3rd Year /6th Semester		**Scheme of Study: 18-Scheme**
Course Name: WEB TECHNOLOGY AND ITS APPLICATIONS		**Course Code: 18CS63**
CO1	Adapt HTML and CSS syntax and semantics to build web pages.	
CO2	Construct and visually format tables and forms using HTML and CSS.	
CO3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to gener display the contents dynamically	
CO4	Appraise the principles of object oriented development using PHP	
CO5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to fo on core features.	

Year/ Semester: 3rd Year /6th Semester		Scheme of Study: 18-Scheme
Course Name: ADVANCED JAVA AND J2EE		Course Code: 18CS644
CO1	Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs.	
CO2	Build client-server applications and TCP/IP socket programs	
CO3	Illustrate database access and details for managing information using the JDBC API	
CO4	Describe how servlets fit into Java-based web application architecture	
CO5	Develop reusable software components using Java Beans	

Year/ Semester: 3rd Year /6th Semester		Scheme of Study: 18-Scheme
Course Name: INFORMATION MANAGEMENT SYSTEM		Course Code: 18CS645
CO1	Describe the role of information technology and information systems in business	
CO2	Record the current issues of information technology and relate those issues to the firm	
CO3	Interpret how to use information technology to solve business problems	

Year/ Semester: 3rd Year /6th Semester		Scheme of Study: 18-Scheme
Course Name: SOFTWARE TESTING LABORATORY		Course Code: 18ISL66
CO1	List out the requirements for the given problem	
CO2	Design and implement the solution for given problem in any programming Language (C,C++,JAVA)	
CO3	Derive test cases for any given problem	
CO4	Apply the appropriate technique for the design of flow graph	
CO5	Create appropriate document for the software artefact.	

Year/ Semester: 3rd Year /6th Semester		Scheme of Study: 18-Scheme
Course Name: FILE STRUCTURES LABORATORY WITH MINI PROJECT		Course Code: 18ISL67
CO1	Implement operations related to files	

CO2	Apply the concepts of file system to produce the given application.
CO3	Evaluate performance of various file systems on given parameters.

Year/ Semester: 3rd Year /6th Semester		Scheme of Study: 18-Scheme
Course Name: MOBILE APPLICATION DEVELOPMENT		Course Code: 18CSMP68
CO1	Create, test and debug Android application by setting up Android development environment	
CO2	Implement adaptive, responsive user interfaces that work across a wide range of devices.	
CO3	Infer long running tasks and background work in Android applications.	
CO4	Demonstrate methods in storing, sharing and retrieving data in Android applications	
CO5	Infer the role of permissions and security for Android applications.	

Year/ Semester: 4th Year /7th Semester		Scheme of Study: 18-Scheme
Course Name: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING		Course Code: 18CS71
CO1	Appaise the theory of Artificial intelligence and Machine Learning.	
CO2	Illustrate the working of AI and ML Algorithms.	
CO3	Demonstrate the applications of AI and ML.	

Year/ Semester: 4th Year /7th Semester		Scheme of Study: 18-Scheme
Course Name: BIG DATA AND ANALYTICS		Course Code: 18CS72
CO1	Understand fundamentals of Big Data analytics	
CO2	Investigate Hadoop framework and Hadoop Distributed File system.	
CO3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data.	
CO4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools.	
CO5	Use Machine Learning algorithms for real world big data. Analyze web contents and Socia Networks to provide analytics with relevant visualization tools.	

Year/ Semester: 4th Year /7th Semester		Scheme of Study: 18-Scheme
Course Name: SOFTWARE ARCHITECTURE AND DESIGN PATTERNS		Course Code: 18CS731
CO1	Design and implement codes with higher performance and lower complexity	
CO2	Be aware of code qualities needed to keep code flexible. Experience core design principles le to assess the quality of a design with respect to these principles	
CO3	Capable of applying these principles in the design of object oriented systems.	
CO4	Demonstrate an understanding of a range of design patterns. Be capable of comprehending a design presented using this vocabulary	
CO5	Be able to select and apply suitable patterns in specific contexts	

Year/ Semester: 4th Year /7th Semester		Scheme of Study: 18-Scheme
Course Name: NETWORK MANAGEMENT		Course Code: 18CS742
CO1	Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets.	
CO2	Apply network management standards to manage practical networks	
CO3	Formulate possible approaches for managing OSI network model	
CO4	Use on SNMP for managing the network. Use RMON for monitoring the behaviour of the network	
CO5	Identify the various components of network and formulate the scheme for the managing Them.	

Year/ Semester: 4th Year /7th Semester		Scheme of Study: 18-Scheme
Course Name: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LABORATORY		Course Code: 18CSL76
CO1	Implement and demonstrate AI and ML algorithms.	
CO2	Evaluate different algorithms	