BLDE Associations
V. P. Dr. P. G. Halakatti College of Engineering and Technology, Vijayapur
Department of Information Science and Engineering

Program Outcomes (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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V. P. Dr. P. G. Halakatti Collegeof Engineering and Technology, Vijayapur

<u>**Department of Information Science and Engineering**</u>

<u>**Program Specific Outcomes (PSOs)**</u>

The Graduates demonstrates the ability to

1. Apply the knowledge of basic science, mathematics and Information Technology to facilitate automation of various scientific applications.

2. Analyse, design, simulate and implement solutions to multi-disciplinary real-world problems using relevant hardware and software tools

3. Develop the IT related product, with the understanding of business aspects and economic impacts, showcasing the leadership qualities required for IT project management, and exhibiting ethical, social and environmental responsibilities.

Department: Information Science and Engineering				Program: BE in Information Science & Engineering
Subject	**Code**	**Course Outcomes**		**Statement**
I Semester				
Mathematics for CSE Stream-I	BMATS101	CO1		Apply the knowledge of calculus to solve problems related to polar curves
		CO2		Learn the notion of partial differentiation to compute rate of change of multivariate functions.
		CO3		Analyse the solution of linear and nonlinear ordinary differential equations.
		CO4		Get acquainted and to apply modular arithmetic to computer algorithms.
		CO5		Make use of matrix theory for solving the system of linear equations and compute Eigen values and Eigen vectors.
Physics for CSE Stream	BPHYS102	CO1		Describe the principles of LASERS and Optical fibres and their relevant applications.
		CO2		Discuss the basic principles of the Quantum Mechanics and its application in Quantum Computing.
		CO3		Summarize the essential properties of superconductors and its applications in qubits.
		CO4		Illustrate the application of physics in design and data analysis.
		CO5		Practice working in groups to conduct experiments in physics and perform precise and honest measurements.

Principles of Programming Using C	BPOPS103	CO1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
		CO2	Apply programming constructs of C language to solve the real world problem
		CO3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
		CO4	Explore user-defined data structures like structures, unions and pointers in implementing solutions
		CO5	Design and Develop Solutions to problems using modular programming constructs using functions
Introduction to C Programming	BESCK104E	CO1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
		CO2	Apply programming constructs of C language to solve the real world problem.
		CO3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting.
		CO4	Design and Develop Solutions to problems using modular programming constructs using functions.
		CO5	Design and Develop Solutions to problems using modular programming constructs using functions.
Introduction to Python Programming	BESCK104E	CO1	Demonstrate proficiency in handling loops and creation of functions.
		CO2	Identify the methods to create and manipulate lists, tuples and dictionaries.
		CO3	Develop programs for string processing and file organization
		CO4	Interpret the concepts of Object-Oriented Programming as used in Python.

Introduction to Cyber Security	BETCK105I	CO1	Explain the cybercrime terminologies
		CO2	Describe Cyber offenses and Botnets
		CO3	Illustrate Tools and Methods used on Cybercrime
		CO4	Explain Phishing and Identity Theft
		CO5	Justify the need of computer forensics
Communicative English	BETCK105I	CO1	Understand and apply the Fundamentals of Communication Skills in their communication skills
		CO2	Identify the nuances of phonetics, intonation and enhance pronunciation skills.
		CO3	To impart basic English grammar and essentials of language skills as per present requirement.
		CO4	Understand and use all types of English vocabulary and language proficiency.
		CO5	Adopt the techniques of information transfer through presentation.
Innovation and Design Thinking	BIDTK158	CO1	Appreciate various design process procedure
		CO2	Generate and develop design ideas through different technology
		CO3	Identify the significance of reverse engineering to understand products
		CO4	Draw technical drawing for design ideas
II Semester			
Mathematics for CSE Stream-II	BMATS201	CO1	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume.
		CO2	Understand the applications of vector calculus refer to solenoidal, and irrigational vectors. Orthogonal curvilinear coordinates.
		CO3	Demonstrate the idea of Linear dependence and independence of sets in the vector space and linear transformation
		CO4	Analyse approximate solutions to solve Computer science engineering problems involving numerical data
		CO5	Apply the knowledge of numerical methods in solving physical and engineering phenomena.

Chemistry for CSE Stream	BCHES202	CO1	Identify the terms and applications processes involved in scientific and engineering applications.
		CO2	Explain the phenomena of chemistry to describe the methods of engineering processes.
		CO3	Solve the problems in chemistry that are pertinent in engineering applications.
		CO4	Apply the basic concepts of chemistry to explain the chemical properties and processes
		CO5	Analyse properties and multi-disciplinary situations.
Computer Aided Engineering Drawing	BCEDK203	CO1	Use CAD tools for basic engineering drawing.
		CO2	Draw different views of points, lines and planes in different orientations.
		CO3	Draw the orthographic and isometric positions of right regular solids.
		CO4	Identify the cut position of the solids and draw the development of lateral surfaces.
Introduction to Electronics Engineering	BESCK204C	CO1	Discuss the concept of Electronics circuits encompassing power supply, amplifiers
		CO2	Explain the concept of oscillator and applications of op-amp in electronic circuits
		CO3	Outline the concept of Boolean algebra and logic circuits, which forms the basis of digital electronics involving logic gates, adder circuits and combinational logic design
		CO4	Discuss the characteristics and technological advances of embedded systems
		CO5	Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved.

Course	Code	CO	Description
Introduction to IOT	BETCK205H	CO1	Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
		CO2	Classify various sensing devices and actuator types.
		CO3	Demonstrate the processing in IoT.
		CO4	Explain Associated IOT Technologies
		CO5	Illustrate architecture of IOT Applications
Renewable Energy Sources	BETCK205E	CO1	Describe the environmental aspects of renewable energy resources. In Comparison with various conventional energy systems, their prospects and limitations.
		CO2	Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation.
		CO3	Understand the conversion principles of wind and tidal energy.
		CO4	Understand the concept of biomass energy resources and green energy.
		CO5	Acquire the basic knowledge of ocean thermal energy conversion and hydrogen energy.
Scientific Foundations for Health	BSFHK258	CO1	To acquire Good Health & It's balance for positive mind-set
		CO2	To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world
		CO3	To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
		CO4	To Prevent and fight against harmful diseases for good health through positive mind-set
Green Building	BETCK205B	CO1	Select different building materials for construction
		CO2	Apply effective environmental friendly building technology
		CO3	Analyse global warming due to different materials in construction
		CO4	Analyse buildings for green rating
		CO5	Use alternate source of energy and effective use water

III Semester				
Transform Calculus, Fourier Series and Numerical Techniques	21MAT31	CO1	To solve ordinary differential equations using Laplace transform	
		CO2	Demonstrate the Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory	
		CO3	To use Fourier transforms to analyse problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations	
		CO4	To solve mathematical models represented by initial or boundary value problems involving partial differential equations	
		CO5	Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.	
Data Structures and Applications	21CS32	CO1	Identify different data structures and their applications.	
		CO2	Apply stack and queues in solving problems	
		CO3	Demonstrate applications of linked list	
		CO4	Explore the application of trees and graphs to model and solve the real-world problem	
		CO5	Make use of Hashing techniques and resolve collisions during mapping of key value pairs	
Analog and Digital Electronics	21CS33	CO1	Acquire knowledge of different types of diode, Transistor biasing, Operational Amplifier and its application circuits, A/D and D/A Converters.	
		CO2	Make use of Simplifying Techniques in the design of Combinational Circuits.	
		CO3	Design, Analysis and Applications of Combinational Circuits.	
		CO4	Simulate digital circuits using VHDL, comprehend and analysis different types flip flops.	
		CO5	Comprehend and design different sequential circuits.	

Course	Code	CO	Description
Computer Organization and Architecture	21CS34	CO1	Explain the organization and architecture of computer systems with machine instructions and programs
		CO2	Analyse the input/output devices communicating with computer system
		CO3	Demonstrate the functions of different types of memory devices
		CO4	Apply different data types on simple arithmetic and logical unit
		CO5	Analyse the functions of basic processing unit, Parallel processing and pipelining
Object Oriented Programming with JAVA Laboratory	21CSL35	CO1	Use Eclipse/NetBeans IDE to design,develop,debug,java projects
		CO2	Analyse the necessity for object oriented programming paradigm over structured programming and become familiar with fundamental concepts in OOP.
		CO3	Demonstrate the ability to design and develop java programs and analyse, and interpret object oriented data and document details.
		CO4	Apply the concepts of multiprogramming, exception/event handling, and abstraction to develop robust programs.
		CO5	Develop user friendly applications using file I/O and GUI concepts.
Ability Enhancement Course – III (Programming with C++)	21CS38X/21CSL38X	CO1	Understanding about object oriented programming and Gain knowledge about the capability to store information together in an object.
		CO2	Understand the capability of a class to rely upon another class and functions.
		CO3	Understand about constructors which are special type of functions.
		CO4	Create and process data in files using file I/O functions
		CO5	Use the generic programming features of C++ including Exception handling.

			IV Semester
Mathematical Foundations for Computing	21CS41	CO1	Understand an intense foundational to fundamental concepts in discrete mathematics
		CO2	Interpret, identify and solve the language associated with logical structure, sets, relations, functions and modular arithmetic.
		CO3	To have insight into statistical methods correlation and regression analysis and fitting of curves.
		CO4	To develop probability distribution for discrete and continuous random variables.
		CO5	Joint probability distribution occurs in digital signal processing design engineering and microwave engineering.
Design and Analysis of Algorithms	21CS42	CO1	Analyse and compare the asymptotic behaviours of functions obtained by elementary composition of polynomials, exponentials and logarithmic functions. Assess the correctness of algorithms using inductive proofs and loop variants.
		CO2	Describe, apply and analyse the different algorithms for sorting and searching problems
		CO3	Design and analyse the algorithms for the optimization problems viz. (Knapsack, shortest path, job scheduling etc).
		CO4	Describe, apply and analyse the different algorithm design techniques: dynamic programming, graph algorithms.
		CO5	Apply and analyse the P, NP, NP-Complete problems, Backtracking and Branch and Bound algorithms.

Microcontroller and Embedded System	21CS43	CO1	Distinguish the microprocessor and microcontroller and comprehend the fundamentals of ARM processor and Embedded Systems.
		CO2	Gain applied knowledge of ARM instruction set to write assembly programs.
		CO3	Enhance the knowledge of Embedded System components and its classifications.
		CO4	Learn Characteristics and co design approach for embedded hardware and firmware development. Illustrate the domain and application specific aspects of embedded system
		CO5	Acquire the basics of operating system and need of operating system, different techniques for embedding firmware into hardware. Recognize and identify different entities of the embedded system development environment.
Operating System	21CS44	CO1	Analyze fundamentals of operating systems, system structures and implement process management algorithms
		CO2	Analyze & implement multi-threaded programming, process scheduling and process synchronization mechanisms
		CO3	Demonstrate deadlock detection & recovery strategies and apply main memory management strategies such as paging and segmentation
		CO4	Demonstrate virtual memory management methods and implement file system methods
		CO5	Implement secondary storage memory management algorithms and incorporate knowledge of Linux operating system.
Biology For Engineers	21BE45	CO1	Elucidate the basic biological concepts via relevant industrial applications and case studies.
		CO2	Evaluate the principles of design and development, for exploring novel bioengineering projects.
		CO3	Corroborate the concepts of biomimetic for specific requirements

		CO4	Think critically towards exploring innovative bio based solutions for socially relevant problems.
Python Programming Laboratory	21CSL46	CO1	Demonstrate proficiency in handling loops and creation of functions.
		CO2	Identify the methods to create and manipulate lists, tuples and dictionaries
		CO3	Discover the commonly used operations involving regular expressions and file system
		CO4	Interpret the concepts of Object-Oriented Programming as used in Python
		C05	Determine the need for scraping websites and working with PDF, JSON and other file formats.
Ability Enhancement Course- IV Web Programming	21CSL481	CO1	Describe the fundamentals of web and concept of HTML.
		CO2	Use the concepts of HTML, XHTML to construct the web pages.
		CO3	Interpret CSS for dynamic documents.
		CO4	Evaluate different concepts of JavaScript & Construct dynamic documents.
		CO5	Design a small project with JavaScript and XHTML.
Universal Human Values	21UH49	CO1	Understand and analyse the essentials of human values and skills, self-exploration, happiness and prosperity.
		CO2	Evaluate coexistence of the "I" with the body.
		CO3	Identify and evaluate the role of harmony in family, society and universal order.
		CO4	Understand and associate the holistic perception of harmony at all levels of existence

		CO5	Develop appropriate technologies and management patterns to create harmony in professional and personal lives
V Semester			
Management, Entrepreneurship for IT Industry	18CS51	CO1	Define management, the nature and characteristics of management and different management approaches; analyse the functional area of management
		CO2	Define the term entrepreneur and entrepreneurship; analyse the evolution of Entrepreneurship and role of entrepreneur in economic development of India.
		CO3	Explain different management processes such as planning, staffing, directing, controlling and also importance of ERP.
		CO4	Evaluate the importance of small scale industries in economic development and also the intuitional support provided by Government of India in order to support the development of small scale industries.
		CO5	Write project reports on his/her business proposals. Explain importance of IPR and cyber law to protect infringement of secret documents.
Computer Networks and Security	18CS52	CO1	Demonstrate the understanding of Application Layer Protocols and develop applications using Socket interface
		CO2	Demonstrate the usage of TCP and UDP for applications
		CO3	Design Routing Algorithms in IP networks
		CO4	Demonstrate the awareness of Network Security Threats and usage of the Algorithms to provide security to Data transmitted through network

		CO5	Demonstrate the awareness of properties and limitations of streaming data, and the related protocols
Database Management System	18CS53	CO1	Develop ER diagrams using database objects, enforce integrity constraints on a database using RDBMS.
		CO2	Analyse relational models, relational algebra concepts & basic Structured Query Language (SQL) in the design of database systems.
		CO3	Design real-world database systems and Internet applications using advanced SQL.
		CO4	Implement normalization algorithms using database design theory for different Applications.
		CO5	Analyse transaction processing, concurrency control and database recovery protocols in databases.
Automata Theory And Computability	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 Non-deterministic and Software models).
		CO3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
		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.

Application Development using Python	18CS55	CO1	Execute simple python programs using variables, expressions and statements, conditional statements and functions.
		CO2	Compare different searching and sorting techniques by implementing python using loops. Demonstrate string built-in functions and store, read the data in files.
		CO3	Create, run and manipulate python programs using core data structures like lists, dictionaries and regular expressions.
		CO4	Demonstrate class and object creation and modify objects using methods and functions.
		CO5	Develop exemplary applications related to network programming using databases and SQL
Unix Programming	18CS56	CO1	Understand the basic concepts of UNIX Architecture, File system and basic commands.
		CO2	Understand the basic file system commands, concepts of Shell programming.
		CO3	Understand the concepts of UNIX API's and process control.
		CO4	Understand the concepts of process accounting, User identification and different IPC mechanisms.
		CO5	Understand signal handling mechanism, daemon characteristics, coding rules and error logging.
Computer Network Laboratory	18CSL57	CO1	Evaluate the performance of Ethernet LAN and Wireless LAN through Simulation.
		CO2	Evaluate the performance of GSM and CDMA model through simulation
		CO3	Develop java programs for CRC and RSA algorithms.
		CO4	Develop java programs for Bellman-ford and leaky bucket algorithms, Socket programming using TCP and UDP.

		CO1	Define and apply the structural and integrity constraints on a database.
DBMS Laboratory with mini project	18CSL58	CO2	Design and develop relational models, relational algebra concepts and ER diagrams.
		CO3	Demonstrate the Structured Query Language (SQL) in the design of database systems
		CO4	Apply normalization, triggers and stored procedures concepts on database design for different applications.
VI Semester			
File Structures	18IS61	CO1	Choose appropriate file structure for storage representation.
		CO2	Identify a suitable sorting technique to arrange the data.
		CO3	Explain the use of consequential processing and multilevel indexing for organizing data in files.
		CO4	Select suitable indexing techniques for solving problems.
		CO5	Use appropriate hashing techniques for better performance to a given problem.
Software Testing	18IS62	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 artifact.
Web Technology and its Applications	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 generate and 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 focus on core features

Course	Code	CO	Description
Data Mining and Data Warehousing	18CS641	CO1	Understands data mining problems and implement the data warehouse
		CO2	Demonstrate the association rules for a given data pattern.
		CO3	Explore the data mining concepts and techniques
		CO4	Discuss between classification and clustering solution
		CO5	Explore the data mining algorithms and techniques
Information Management System	18IS645	CO1	Understand and apply design principles in Management Information Systems(MIS)
		CO2	Identify and analyse requirements for information systems
		CO3	Effectively evaluate technology alternatives to solve problems in an MIS context
		CO4	Effectively communicate to both business and IT Professional
		CO5	Identify the issue of global market and resolve them.
		CO6	Understand the different challenges in Marketing, Finance, Business, Accounts, and e-commerce
Software Testing Laboratory	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.
File Structures Laboratory with mini project	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.

Course	Code	CO	Description
Mobile Application Development	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.
VII Semester			
Artificial Intelligence and Machine Learning	18CS71	CO1	Define artificial intelligence, problem space and search space and heuristics techniques to solve AI problems.
		CO2	Represent the knowledge for machine understanding by concept learning with different algorithms like Find-S , Candidate Elimination and Inductive bias of Candidate Elimination Algorithm.
		CO3	Apply the concept of decision tree and ANN modelling to solve AI problems i.e. by using ID3 and Back propagation algorithms.
		CO4	Apply Bayes theorem, Bayes theorem and concept learning, Gibbs algorithm, Navie Bayes classifier and EM Algorithms to solve AI and ML problems.
		CO5	Apply machine learning algorithms like k-Nearest Neighbour, Locally weighted regression, Radial basis function, Case-Based reasoning, Reinforcement and Q-Learning to design and build AI/ML models.

Big Data Analytics	18CS72	C472.1	Design and analyse different building blocks of Big Data.
		C472.2	Investigate Hadoop framework and Hadoop Distributed File system for big data.
		C472.3	Illustrate NoSQL, MongoDB and Cassandra for Big Data Management.
		C472.4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools such as Hive and Pig.
		C472.5	Use machine learning algorithms for Big Data Analytics, Web Mining and Social Network Analysis.
Software Architecture and Design Patterns	18CS731	CO1	Design and implement codes with higher performance and lower complexity
		CO2	Be aware of code qualities needed to keep code flexible
		CO3	Experience core design principles and be able to assess the quality of a design with respect to these principles.
		CO4	Capable of applying these principles in the design of object oriented systems.
		CO5	Demonstrate an understanding of a range of design patterns. Be capable of comprehending a design presented using this vocabulary.
Cryptography	18CS744	CO1	Understand basic cyber-attack types, its defined strategies and techniques, mathematical background with basic cryptography and advanced techniques.
		CO2	Apply and illustrate Cryptographic algorithms like RSA, SHA-1 and Diffie-Hellman key exchange protocols to distinguish performance issues in Network Security.
		CO3	Analyse and Compare Key Management to Digital Certificates, one-way and mutual authentication, Kerberos, IPsec and Secure Socket layer protocols.
		CO4	Utilize and Evaluate IEEE 802.11, Firewalls, IPDS and SOAP protocol for cyber security.
		CO5	Design and Develop solutions to the Challenges of current security problems and implement cyber laws.

		CO1	Apply the algorithms for A* search, AO* Search.
Artificial Intelligence and Machine Learning Laboratory	18CSL76	CO2	Apply the candidate Elimination, decision tree, Artificial neural network algorithms.
		CO3	Apply the algorithms for Naive Bayesian classifier and EM Classifier
		CO4	Apply the K-Nearest Neighbour and regression algorithms.
Project Work Phase – 1	18CSP77	CO1	Gain the knowledge of contemporary issues through literature surveys.
		CO2	Formulate, design and apply programming skills to implement the solutions to global, economic, environmental and societal problems..
		CO3	Apply modern technologies and engineering tools.
		CO4	Effectively communicate verbally and literally.
		CO5	Work individually and as a team member in multidisciplinary domains with ethical standards.
VIII Semester			
Internet of Things	18CS81	CO1	Illustrate the knowledge about Genesis of IoT, IoT Network Architecture, Sensors and Actuators Working and their Connection, IoT Access Technologies, and IP in IoT, Data and Analytics for IoT, IoT Physical Devices and Endpoints like Arduino UNO and Raspberry Pi.
		CO2	Apply the knowledge for Connecting Smart Objects, Optimizing IP for IoT, Big Data Analytics and Smart Cities.
		CO3	Analyse the protocol stack of the different wired and wireless access technology, IPv4 and IPv6 protocol stacks.
		CO4	Compare the functionality and performance of different IoT Architectures, IPv4 and IPv6 protocol, Information and Operational Technology.
		CO5	Propose the different IoT applications based on IoT Network Architecture like Home and Smart City Applications etc.

Storage Area Networks	18CS822	CO1	Identify key challenges in managing information and understand evolution of storage architectures, logical and physical components of a storage infrastructure including storage subsystems, and storage provisioning.
		CO2	Illustrate the implementation of RAID levels and Intelligent storage systems.
		CO3	Describe storage networking technologies such as FC-SAN, NAS, IP-SAN.
		CO4	Understand and articulate business continuity solutions including, backup technologies, and local and remote replication solutions in classic and virtualization environments and Identify types of archives and forms of virtualization.
		CO5	Describe information security, and storage security domains and Identify parameters of managing and monitoring storage infrastructure, describe common storage management activities and solutions.
Project Work Phase -2	18CSP83	CO1	Gain the knowledge of contemporary issues through literature surveys.
		CO2	Formulate, design and apply programming skills to implement the solutions to global, economic, environmental and societal problems..
		CO3	Apply modern technologies and engineering tools.
		CO4	Effectively communicate verbally and literally.
		CO5	Work individually and as a team member in multidisciplinary domains with ethical standards.

Technical Seminar	18CSS84	CO1	Read and understand recent trends and technologies in area of computer of information technology
		CO2	Recognizing problems after doing research literature survey using various resources.
		CO3	Prepare concise, comprehend and conclude selective topic in area of information technology
		CO4	Provides students with exposure to a variety of research projects and activities in order to enrich their academic experience
		CO5	Provides opportunity for students to develop skills in presentation and discussion of research topics in a public forum
Internship	18CSI85	CO1	Understanding the modern tools used in the field of information science and engineering for product development.
		CO2	Demonstrate ethical conduct and Professional accountability while working in a team for the benefit of society.
		CO3	Understand the resources requirement and planning to facilitate the project success.
		CO4	Apply hands on experience, communication, interpersonal and other critical skills to integrate theory and practice in a multidisciplinary area.
		CO5	Manage time, Analyse the skills which are transferable to new contexts and identify which appropriate engineering technology could be used to solve a given problem.