Department Name :- Computer Science & Engineering
UG Program Name :- B.Tech. in Computer Engineering
Vision and Mission :-

Vision: To excel in the computer science engineering discipline through continuous research, innovation and industry-oriented curriculum leading to responsible IT professionals.

Mission:

1. To inculcate teaching and learning process promoting state-of-the-art IT industry practices in computer science engineering and technology to address global challenges.

2. To integrate academics, research and entrepreneurship skills to address present and future challenges of the society and industry.

3. To develop professionalism with strong foundations adapting to changing technology.

Sr. No.	Program Outcomes
1.	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals,and an engineering specialization to the solution of complex engineering problems.
2.	**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.
3.	**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.
4.	**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.
5.	**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.
6.	**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.
7.	**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.
8.	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9.	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10.	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such

Sr. No.	Program Outcomes
	as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11.	**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.
12.	**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.

Sr. No.	Program Specific Outcomes
1.	Apply knowledge of database management systems, data mining and analytics techniques to solve real world problems
2.	Apply knowledge of machine learning and intelligence to identify, formulate and solve complex engineering problems
3.	Design, develop and deploy software using emerging IT technologies like open source tools, mobile application development platforms, web technologies and cloud computing

Sr. No.	Semester	Course Code	Course Name	Course Outcome
1.	III	CS2013	Computer Organization	CO1.To conceptualize basics of organizational and architectural issue, functional unit of processor in digital computer and apply in computer organization and Architecture
				CO2.Construct the ability to perform computer arithmetic operations such as binary, signed, decimal, hexadecimal, floating point numbers.
				CO3.Interpreting memory organization that uses banks for different word size operations and cache mapping techniques including translation, allocation
				CO4.Ability to understand input/output organization, data transfer techniques for computer.
				CO5.To analyze processor performance improvement using instruction level parallelism in digital computer.
2.	III	CS2033	Data structure &Algorithms	CO1. Compare between linear and nonlinear data structures
				CO2. Describe the characteristics of various data structure such as stacks, queues, trees, graphs and Hash tables.
				CO3. Analyze various searching and sorting algorithms and apply it to solve particular problem.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO4. Determine a suitable data structure and algorithm to solve a real world problem
3.	III	CS2053	Digital Electronics	CO1.Perform various arithmetic operations on different number systems.
				CO2.Apply Boolean algebra to solve logic functions.
				CO3.Design, implement, and analyze various logic circuits.
				CO4.Apply the programming techniques in developing the assembly language program for microprocessor system.
4.	III	CS2073	Discrete Mathematics	CO1. Define mathematical logic, truth table, and their applications to programming and hardware design.
				CO2. Introduce mathematical logic applied to circuits, automata and algorithm analysis.
				CO3. Apply direct and indirect methods of proof and to prove elementary mathematical results
				CO4. Apply counting principles to determine the number of various combinatorial configurations
				CO5. Be able to solve problems on graphs and networks
				CO6. Solve problems on Permutations, Combinations and Discrete Probability
5.	III	CS2093	Operating Systems	CO1.Differentiate various operating systems
				CO2.Discuss concept of process and threads
				CO3.Explain synchronization techniques
				CO4.Explain concept of deadlock and avoidance of it
				CO5.Discuss memory management in operating system
				CO.6dentify the correct page replacement algorithm for a given problem statement
6.	III	CS2113	Advanced C Programming Lab	CO1. Learn advanced C topics like command line arguments, file handling, pointers, dynamic memory allocation, and Macros.
				CO2. Implement, Compile and Debug Complex C programs.
				CO3. Solve tricky questions on C programming.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO4. Analyze given C program carefully and guess the output of same.
				CO5. Develop problem solving skills among students using C programming.
7.	III	CS2133	Data structure & Algorithms Lab	CO1. Implement various data structures in C Language.
				CO2. Write and execute basic algorithms in C language.
				CO3. Choose appropriate data structure to develop a real time application.
				CO4. Analyze and compare the static and dynamic implementations of various data structures.
8.	III	CS2153	Digital Electronics Lab	CO1.Demonstrate different types of gates.
				CO2.Design various logic circuits.
				CO3.Draw flowchart and apply assembly language programming techniques to develop the assembly language program for microprocessor system.
9.	III	CS2173	Technical Aptitude-I	CO1.Choose proper techniques to find solution for engineering problems
				CO2.Solve various types of problems
				CO3.Develop ability to face competitive examinations
				CO4.Inspect the problem & conclude with proper solution
10.	III	SH2593	Personal Effectiveness & Body Language	CO1. Develop skills to build self-esteem and positive attitude.
				CO2. Develop interpersonal skills characterized by effective communication and conflict resolution.
				CO3. Discover ways to overcome procrastination.
				CO4. Demonstrate responsiveness towards stress and health issues.
				CO5. Interpret the non-verbal behaviour of a person.
11.	III	SH2613	Interpersonal Skills (Work life Balance)	CO1. Exhibit interpersonal communication skills.
				CO2. Demonstrate decision-making skills.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO3. Apply conflict resolution styles appropriate in different situations.
				CO4. Demonstrate skills to manage balance in work and life.
				CO5. Apply Jeevanvidya wisdom in day to day life.
12.	III	SH2633	Leadership & Public Speaking	CO1. Explain the traits of a leadership through real life examples.
				CO2. Exhibit the ability to work effectively in team.
				CO3. Prepare a presentation as per the audience and context requirements.
13.	III	SH2693	Innovation Tools and Methods for Entrepreneurs	CO1. Explain structured approach to define the problem with every possible detail, identify conflicts and solve them
				CO2. Apply User Journey Map to the selected problem to show user interaction at various stages
				CO3. Analyze the solutions provided by competitors for effectiveness and gaps if any.
14.	III	SH2733	German Language – Basic Level	CO1. Interpret the language if the next person is speaking slowly and clearly.
				CO2. Make use of the language in routine life with the routing topics like family, shopping, work etc.
				CO3. Demonstrate the language by self-introduction in German with simple sentences.
15.	III	SH2713	Japanese Language – Basic Level	CO1 Make use of basic conversations in various situations.
				CO2 Identify the sentence patterns.
				CO3. Explain insights about the communication required for living in Japan.
				CO4. Interpret Japanese work ethics required in their professional career.
16.	IV	CS2003	Computer Networks	CO1. Identify and explain the modulation techniques, components used in a communication system.
				CO2.Identify different Network models and protocols of different layers
				CO3.Discuss the concept multiplexing & switching.
				CO4.Recognize and discuss the functions the

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				different protocols in network layer
				CO5.Identify the proper transmission control protocol for given applications
				CO6.Explain the different services at application layer.
17.	IV	CS2023	Formal Language & Automata Theory	CO1. Apply the mathematical techniques for solving the automata problem.
				CO2. Implementation of compiler with the help finite machine model.
				CO3. Build regular expressions for the regular languages.
				CO4. Design a various computation machines like finite automata, pushdown automata, and Turing machines.
				CO5. Analyze the finite machine model.
18.	IV	CE2263	Engineering Mechanics	CO1. Classify various forces and their effects, to analyze real life problems.
				CO2. Analyze engineering problems applying conditions of equilibrium.
				CO3. Determine Centroid & Moment of Inertia of the geometrical plane lamina.
				CO4. Apply fundamental concepts of Kinematics and Kinetics to analyze practical problems.
19.	IV	SH2023	Engineering Mathematics - III	CO1. Compute Karl Pearson's product moment correlation coefficient and fit the lines of regression.
				CO 2. Compute discrete probability distribution, continuous probability distributions and joint probability distributions.
				CO 3. Apply specific probability distributions to real-life examples.
				CO 4. Solve the problems on fuzzy sets.
				CO 5. Apply extension principle to fuzzy arithmetic and solve fuzzy equations
20.	IV	CS2043	Computer Networks Lab	CO1. Define and apply architectural principles and mechanisms for data exchange among computer
				CO2. Design, implement and analyse simple computer networks.
				CO 3. Identify&analyse the performance of different network layer protocols to formulate and solve network-engineering problems

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO 4. Identify Operations of TCP/UDP, FTP, HTTP, SMTP, SNMP etc.
				CO 5. Analyse to compare performance of different routing protocols.
				CO 6. Compare different networking models.
				CO 7. Ability to use techniques, skills, and modern networking tools necessary for engineering practice.
				CO 8. Demonstrate an understanding of computer communications standards
21.	IV	CS2063	Object Oriented Programming Lab	CO1. Describe object-oriented design concepts & apply them in software system design.
				CO2. Implement basic OOP concepts like Class & Object, Inline functions, dynamic memory allocations etc.
				CO3. Demonstrate constructors, destructors, function overloading, operator overloading, and friend functions in C++.
				CO4. Write and Execute C++ programs for different types of Inheritance and virtual functions.
				CO5. Apply advanced features of C++ programming like exception handling, Templates etc.
22.	IV	CE2283	Engineering Mechanics Lab	CO 1. Compare coefficient of friction of various surfaces in contact.
				CO 2. Correlate theoretical and practical results of support reactions and Centroid of plane lamina.
				CO3. Verify law of polygon of forces, law of triangle of forces and principle of moment.
23.	IV	SH2173	Environmental Science	CO1. Discuss the importance and sensitivity of environment.
				CO 2. Interpret the over exploitation of natural resources and follow the environmental ethics.
				CO 3. Explain methods to protect environment and prevent environmental pollution.
				CO 4. Apply their knowledge and skills to solve environment related problems.
24.	IV	SH2603	Environmental Science Project	CO1. Utilize scientific methods to solve environmental problems.
				CO 2. Evaluate technologies for restoration of

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				degraded environment.
				CO 3. Develop presentation and report writing skills.
				CO 4. Develop as an individual and in group leadership quality.
25.	IV	CS2083	Technical Aptitude-II	CO1. Choose proper techniques to find solution for engineering problems
				CO2. Solve various types of problems
				CO3. Develop ability to face competitive examinations
				CO4. Inspect the problem & conclude with proper solution
26.	IV	SH2592	Personal Effectiveness & Body Language	CO1. Develop skills to build self-esteem and positive attitude.
				CO2. Develop interpersonal skills characterized by effective communication and conflict resolution.
				CO3. Discover ways to overcome procrastination.
				CO4. Demonstrate responsiveness towards stress and health issues.
				CO5. Interpret the non-verbal behaviour of a person.
27.	IV	SH2612	Interpersonal Skills (Work life Balance)	CO1. Exhibit interpersonal communication skills.
				CO2. Demonstrate decision-making skills.
				CO3. Apply conflict resolution styles appropriate in different situations.
				CO4. Demonstrate skills to manage balance in work and life.
				CO5. Apply Jeevanvidya wisdom in day to day life.
28.	IV	SH2632	Leadership & Public Speaking	CO1. Explain the traits of a leadership through real life examples.
				CO2. Exhibit the ability to work effectively in team.
				CO3. Prepare a presentation as per the audience and context requirements.
29.	IV	SH2692	Innovation Tools and Methods for Entrepreneurs	CO1. Explain structured approach to define the problem with every possible detail, identify conflicts and solve them

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO2. Apply User Journey Map to the selected problem to show user interaction at various stages
				CO3. Analyze the solutions provided by competitors for effectiveness and gaps if any.
30.	IV	SH2642	German Language – Advanced Level	CO1. Interpret the language if the next person is speaking slowly and clearly.
				CO2. Make use of the language in routine life with the routing topics like family, shopping, work etc.
				CO3. Demonstrate the language by self-introduction in German with simple sentences.
31.	IV	SH2622	Japanese Language – Advanced Level	CO1. To be able to make basic conversations in various situations.
				CO2. To recognize the sentence patterns.
				CO3.To improve Japanese Language proficiency.
				CO4.To give students insights about the communication required for living in Japan.
				CO5. To expose students to the Japanese work ethics required in their professional careers.
32.	V	CS3013	Database Management Systems	CO1: Describe the purpose and nature of database system for storing and fast access to the data
				CO2 : Sketch E-R models to represent simple database application scenarios:
				CO3: Apply relational database design concepts to remove data redundancy and to retrieve data easily
				CO4: Write the queries to manipulate and access data using procedural and non-procedural Languages
				CO5: Explain various protocols, issues and techniques related to transaction management for consistent & stable database
33.	V	CS3033	System Software	CO1:.Explain the role of system programs in development phase and able to apply appropriate knowledge of
				CO2. Illustrate the logical analysis & design aspect of macro with macro preprocessing activities
				CO 3. Determine the aspect of language processing from linker and loaders perspective
				CO 4. Analyze different phases of compilers and practice the compiler construction tools such as LEX and YACC to build systems program modules computing
				CO 5. Design an effective intermediate and optimized code generator
				CO 6. Describe the various properties of

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				optimization and generation
34.	V	CS3053	Design & Analysis of Algorithms	CO1. Study basic algorithmic strategies
				CO 2. Analyze the performance or complexity of algorithms
				CO 3. Identify appropriate algorithm design techniques for solving problems
				CO 4. Design an algorithm to solve problem in systematic way
				CO 5. Explain non-deterministic and randomized algorithms
35.	V	CS3073	Data Mining	CO1. Analyze the aspect of mining data over the statistical techniques for selected applications
				CO 2. Justify the usage of various classification/clustering algorithms
				CO 3. Apply knowledge to build association based rules technique for real world case studies
				CO 4. Explore data warehousing and OLAP concepts
				CO 5. Experiment the advancement in mining techniques for wide variety of areas
36.	V	CS3093	Soft Computing	CO 1. Explain the principles and basic concepts of Soft Computing techniques
				CO 2. Identify the logic of fuzzy rule-set and its reasoning
				CO 3. Solving objective optimization problem GAs
				CO 4. Analyze multi-objectiove optimization problerms using Evolutionary algorithms (MOEAs)
				CO 5. Classify the need for supervised – unsupervised neural models and its application
37.	V	CS3013	Information Security	CO 1.Analyze different methods of Data Encryption and Decryption; their advantages & limitations .
				CO 2. Use different key distribution methods for distribution of Public/Private & Secret keys.
				CO 3. Apply message authentications techniques for implementing security during message communication.
				CO 4. Create and use digital signatures
				CO 5. Discuss different security attacks & security solutions for e-mail & web applications.
38.	V	CS3133	Swift Development Lab-I	CO 1. Define key programming terms relevant to Swift and iOS programming
				CO 2. Describe the process of creating iOS apps.
				CO 3. State the purpose of the Apple developer tools, such as Xcode, Instruments, debugger, analyzer, and iOS Simulator.
				CO 4. Recognize patterns and idioms present in the Cocoa Touch API and other Apple frameworks.
				CO 5. Employ the Apple developer tools to create an iOS app.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO 6. Demonstrate programming best practices in Swift.
				CO 7. Explain and summarize iOS API features including location, mapping, sensors, gestures, multimedia and user interface components.
39.	V	CS3153	JAVA Programming Lab	CO 1. Demonstrate Object Oriented features and apply them in problem solving
				CO 2. Write programs for solving real world problems using java collection frame work.
				CO 3. Implement the multithreading and client side programming.
				CO 4. Develop graphical User Interface using AWT
40.	V	CS3173	Database Management Systems Lab	CO 1. Sketch E-R diagram for given Case Study/ Problem Statement.
				CO 2. Design relational database using Normalization and Functional Dependency.
				3. Implement SQL query for various operations like retrieval, insertion and manipulation of data etc.
				CO 4. Implement PL/SQL cursor, procedure, function and trigger
				CO 5. Apply hashing mechanism to build hash index file on given records.
				CO 6. Develop a program to connect database to an application program
41.	V	CS3193	Technical Aptitude-III	CO 1. Choose proper techniques to find solution for engineering problems
				CO 2. Solve various types of problems
				CO 3. Develop ability to face competitive examinations
				CO 4. Inspect the problem & conclude with proper solution
42.	V	SH3033	Scholastics Aptitude-I	CO 1. Develop a logical approach towards solving Aptitude and Reasoning problems.
				CO 2. Analyze usage of basic aptitude terms of percentages, averages, ratios and applications of business aptitude terms of profits and interests
				CO 3. Develop a bridge in analogies, series and visualizing directions.
				CO 4. Apply various short cuts & techniques to manage speed and accuracy to get equipped for various competitive and campus recruitment exams
43.	V	SH3011	Indian Constitution	CO 1. Create awareness about law depiction and importance of Constitution
				CO 2. Define Fundamental Rights and Fundamental Duties of the Indian Citizen to instill morality, social values, honesty, dignity of life and their social Responsibilities.
				CO 3. Create Awareness of their Surroundings, Society, Social problems and their suitable solutions while keeping rights and duties of the

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				citizen keeping in mind.
				CO 4. Recognize distribution of powers and functions of Local Self Government.
				CO 5. Comprehend the National Emergency, Financial Emergency and their impact on Economy of the country.
44.	V	CS3213	Summer Internship/ Professional Certification	CO 1. Find possible opportunities to learn, understand and sharpen the real time technical / managerial skills required at the job
				CO 2. Explore the current technological developments relevant to the subject area of training.
				CO 3. Apply the Technical knowledge in real industrial situations
				CO 4. Gain experience in writing Technical reports/projects
				CO 5. Expose engineer's responsibilities and ethics
				CO 6. Understand the social, economic and administrative considerations that influence the working environment of industrial organizations
				CO 7. Understand the psychology of the Employees and their attitudes and approach to problem solving
45.	VI	CS3023	Advanced Algorithms	CO 1. Analyze the asymptotic performance of algorithms and Explore methods of solving recurrences
				CO 2. Able to Explain the major graph algorithms and Employ graphs to model engineering problems, when appropriate.
				CO 3. Understand the knowledge about number - theoretic algorithms
				CO 4. Able to analyze String matching algorithms.
				CO 5. Able to represent understand Fast Fourier transformation.
				CO 6. Able be analyze simple approximation algorithms and also able to apply basic design techniques to approximately solve discrete optimization problems.
46.	VI	CS3023	Optimization Techniques	CO1. Illustrate the concepts of optimization and its terminologies..
				CO 2. Explore optimization problems from various domains and formulate the mathematical models
				3. Explore different operators of evolutionary algorithms.
				CO 4. Analyze the performance of different swarm algorithms.
				CO 5. Evaluate the efficiency of incremental optimization algorithms for complex problem solving.
47.	VI	CS3043	Linux Operating	CO 1. Describe the basic concept of LINUX

Sr. No.	Semester	Course Code	Course Name	Course Outcome
			System	operating system and LINUX shell commands
				CO 2. Perform various file management operations in Linux environment using appropriate commands and scripts
				CO 3. Design and manage network in Linux environment using appropriate commands and scripts
				CO 4. Perform various system administrative operations in Linux environment using appropriate commands and scripts
48.	VI	CS3063	Swift Development Lab-II	CO 1. Demonstrate an understanding of the fundamentals of Swift, building modern mobile apps, iOS, Xcode, and other tools in the Xcode development environment
				CO 2. Create a basic iOS app to get familiar using Xcode.
				CO 3. Test and debug apps in a Mac, using the Simulator from Xcode
				CO 4. Create visual interfaces using the Interface Builder from Xcode.
				CO 5. Demonstrate an understanding on how to build scroll views, table views, and complex input screens for apps.
49.	VI	OE3123	Information Technology Foundation program	CO1.Apply object oriented concept in real world scenario.
				CO2.Solve computational problem using data structure & Algorithm.
				CO3.Design an ER model for given problem domain.
				CO4.Test and Debug the code
50.	VI	OE3013	Network Administration	CO1. Identify the correct cable type required to connect two networks.
				CO 2. Express working of Internetworking models and need of OSI model
				CO 3. Differentiate between collision and broadcast domain
				CO 4. Identify Ipv4 address and classify it
				CO 5. Express working of networking services like FTP, Telnet, DHCP and DNS
				CO 6. Design a network for given requirements
51.	VI	SH304	Psychology for Engineers	CO1. Interpreted human behavior as a system from a psychological perspective.
				CO 2. Evaluate human behavior in terms of "Engineer-In-Environment" from a psycho-social approach in problem-solving with individuals, groups and organizations.
				CO 3. Apply systems theories, research and other theories and knowledge regarding human behavior and emotional intelligence in assessing and interacting with individuals, groups and organizations.
52.	VI	SH302	Biology for	CO1.Apply biological engineering principles,

Sr. No.	Semester	Course Code	Course Name	Course Outcome
			Engineers	procedures needed to solve real-world problems
				CO2. Describe the functions of biological systems
				CO3. Analyze biological phenomena and compute work done at microscale.
				CO4. Explain working of different biomedical instruments
				CO5. Select the sensors for given biological applications
				CO6. Explain relevant aspect of movement control process
53.	VI	CS3083	Software Engineering	CO 1. Understand and demonstrate basic knowledge in software engineering..
				CO 2. Identify requirements, analyze and prepare models.
				CO 3. Plan, schedule and track the progress of the projects.
				CO 4. Design & develop the software projects
				CO 5. Identify risks, manage the change to assure quality in software projects.
				CO 6. Apply testing principles on software project and understand the maintenance concepts.
54.	VI	CS3123	.NET Programming Lab	CO1. Explain the important features of .NET Framework technology.
				CO 2. Develop console and Windows application by using C# language.
				CO 3. Implement object-oriented programming concepts like data encapsulation, data hiding, inheritance and polymorphism using C# language.
				CO 4. Use advanced features of C# language like multithreading, exceptions and delegates.
				CO 5. Design and develop project using C# for any real-world problem.
55.	VI	CS3183	Capstone Project phase-I	CO 1.Apply knowledge of computer science for real world problem.
				CO 2.Possess Professional, Practical and reflective practitioner skills
				CO 3.Upgrade and apply the knowledge through continuous learning
				CO 4.Effectively apply Design Thinking Processes and Template to structure learning lifecycle in the development of a prototype
				CO 5.To develop project management and time management skills
				CO 6.To formulate a process whereby to keep the end-user or customer in mind throughout the project life cycle.
56.	VI	CS3143	Technical Aptitude-IV	CO1. Choose proper techniques to find solution for engineering problems
				CO2. Solve various types of problems
				CO3. Develop ability to face competitive

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				examinations
				CO4. Inspect the problem & conclude with proper solution
57.	VI	SH3063	Scholastics Aptitude-II	CO 1. Develop a logical approach towards solving Aptitude and Reasoning problems.
				CO 2. Analyze usage of basic aptitude terms of percentages, averages, ratios and applications of business aptitude terms of profits and interests
				CO 3. Develop a bridge in analogies, series and visualizing directions
				CO 4. Apply various short cuts & techniques to manage speed and accuracy to get equipped for various competitive and campus recruitment exams
58.	VI	CS3163	Mobile Application Development	CO 1. Setup the Android development environment
				CO 2. Utilize the appropriate User Interface controls in Android app
				CO 3. Implement SQLite and Shared Preferences concepts to store data in Android app
				CO 4. Implement Location and Notification based functionalities in Android app
				CO 5. Design and develop a WebView based Android app
				CO 6. Build and deploy Android app on Google Play Store
59.	VII	CS4032	Program Elective IV - Data Mining	CO 1. Analyze the aspect of mining data over the statistical techniques for selected applications
				CO 2. Justify the usage of various classification/clustering algorithms
				CO 3. Apply knowledge to build association based rules technique for real world case studies
				CO 4. Explore data warehousing and OLAP concepts
				CO 5. Experiment the advancement in mining techniques for wide variety of areas
60.	VII	CS4052	Program Elective IV - Software Testing and Quality Assurance	CO 1. Demonstrate various terms and technologies used in testing domain.
				CO 2. Apply the software testing techniques in commercial environments.
				CO 3. Design different test plan and test cases for software quality improvement.
				CO 4. Choose suitable open source testing & automation tools.
				CO 5. Use various types of software tests and quality control standards.
61.	VII	CS4072	Program Elective IV - Wireless	CO 1. Comment on difference between wireless and wired networks and possible challenges in the design of wireless networks.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
			Networks	CO 2. Identify design issues in various wireless technologies and discuss possible solutions for them.
				CO 3. Review architectures of various access technologies such as 3G, 4G, WiFi etc.
				CO 4. List challenges and possible solutions in various layers for Ad hoc networks
				CO 5. Demonstrate working of different types of wireless network applications.
62.	VII	CS4013	Machine Learning	CO 1. Identify the challenges and opportunity for solving real-world problems using Machine Learning approach.
				CO 2. Select appropriate evaluation metrics for checking ML algorithm accuracy.
				CO 3. Construct graphical presentation of data by applying ML algorithms.
				CO 4. Apply clustering algorithm to classify non- labeled data.
				CO 5. Choose appropriate ML and Neural network algorithm for predication of class label or value of target attribute.
63.	VII	CS4092	Program Elective V - Artificial Intelligence	CO 1. Apply Artificial Intelligence techniques for problem solving
				CO 2. Comprehend the abstractions and reasoning for Intelligent Agents
				CO 3. Analyze and design a real-world problem for implementation
				CO 4. Develop knowledge of decision making and learning methods
				CO 5. Select appropriately from a range of techniques when implementing intelligent systems
64.	VII	CS4112	Program Elective V - Software Engineering	CO 1. Understand and demonstrate basic knowledge in software engineering.
				CO 2. Identify requirements, analyze and prepare models.
				CO 3. Plan, schedule and track the progress of the projects.
				CO 4. Design & develop the software projects.
				CO 5. Identify risks, manage the change to assure quality in software projects.
				CO 6. Apply testing principles on software project and understand the maintenance concepts.
65.	VII	CS4132	Program Elective V -	CO 1. A recapitulation of software engineering process models.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
			Advanced Software Engineering	CO 2. A recapitulation of the basic techniques for requirements engineering and design.
				CO 3. Project management, Maintenance and re-engineering.
				CO4.Process and project metrics.
				CO 5. Estimation for software projects and Project scheduling.
66.	VII	CS4352	Program Elective V Lab - Artificial Intelligence Lab	CO1. Apply Artificial Intelligence techniques for problem solving
				CO 2. Comprehend the abstractions and reasoning for Intelligent Agents
				CO 3. Analyze and design a real-world problem for implementation
				CO 4. Develop knowledge of decision making and learning methods
				CO 5. Select appropriately from a range of techniques when implementing intelligent systems
67.	VII	CS4152	Program Elective V - Internet of Things	CO1. Identify the various components of IoT.
				CO2. Design a middleware for IoT.
				CO3. Identify the issues to address the security, intelligence in IoT.
				CO4. Describe various protocols used in IoT.
				CO5. Establish the communication between IoT devices and cloud server using wireless technology.
				CO6. Develop IoT application to solve real world problems.
68.	VII	CS4412	Program Elective V Lab - Internet of Things Lab	CO1. Identify the components of IoT
				CO 2. Design a middleware for IoT
				CO 3. Develop IoT application to solve social problems
				CO 4. Analyze various protocols for IoT
				CO 5. Establish the communication to the cloud through Wi-Fi / Bluetooth
69.	VII	CS4172	Program Elective VI - Natural Language Processing	CO1. Acquire knowledge of the fundamental mathematical models and algorithms in the field of NLP...
				CO2. Apply these mathematical models and algorithms in applications in software design and implementation for NLP
				CO3. Apply deep learning models to solve machine translation and conversation problems
				CO4. Apply deep structured semantic models on information retrieval and natural language applications.
				CO5. Acquire knowledge of the design and implementation issues in various NLP applications such as information extraction and Machine translation.
70.	VII	CS4192	Program Elective VI - Big Data Analytics	CO1. Identify big data for business intelligence
				CO 2. Explore the fundamental concepts of big data and its analytics

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO 3. Analyze the big data using Hadoop and intelligent techniques
				CO 4. Apply NoSQL big data management underlying analytics framework
				CO 5. Recognize the suitable secure models for building competitive business decisions
71.	VII	CS4212	Program Elective VI - Principles and Practices for IT Management	CO 1. To describe concepts of requirement analysis, risk, budgeting a project, creating a work breakdown structure.
				CO 2. Apply critical path method for project tracking and progress project.
				CO 3. To demonstrate resource allocation and scheduling concepts.
				CO 4. To apply strategies, policies and strategic management in project development.
				CO 5. To classify Intellectual Property Rights and related laws.
				CO 6. CO6. To develop IT application for marketing, health care, insurance, banking, agriculture and service sector.
72.	VII	CS4353	Capstone Project phase-II	CO1. Apply knowledge of computer science for real world problem.
				CO 2. Possess Professional, Practical and reflective practitioner skills
				CO 3. Upgrade and apply the knowledge through continuous learning
				CO 4. Effectively apply Design Thinking Processes and Template to structure learning lifecycle in the development of a prototype
				CO 5. To develop project management and time management skills
				CO 6. To formulate a process whereby to keep the end-user or customer in mind throughout the project life cycle.
73.	VII	CS4232	Program Elective VI - Computer Graphics and Virtual Reality	CO 1. Apply the mathematical techniques for representing points, lines, curves and surface in graphics
				CO 2. Design algorithms to draw lines, circle, polygons, etc
				CO 3. Demonstrate the knowledge of projections
				CO 4. Learn the basics of OpenGL and emerging technologies using openGL and GLUT libraries

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO 5. Design a virtual environment
				CO 6. List and describe graphic devices used in virtual reality system
74.	VII	CS4252	Finance & Accounting	CO 1. Explain the Indian financial system with its components.
				CO 2. Evaluate financial and management accounting.
				CO 3. Develop the ability in participants' to use financial statements to assess a company's performance.
				CO 4. CO4.Estimate the software cost using various models.
75.	VII	CS4272	Machine Learning Lab	CO 1. Explore dataset and it associated characteristics using python libraries.
				CO 2. Implement various supervised learning algorithms on given dataset.
				CO 3. Propose solution for real world problem by implementing ML algorithms.
				CO 4. CO4.Find the hidden patterns from given dataset by applying unsupervised learning algorithms
76.	VII	CS4292	Program Elective IV Lab - Data Mining Lab	CO 1. Analyze the aspect of Weka tool over the statistical techniques
				CO 2. Demonstrate various classification/clustering algorithms on huge data sets
				CO 3. Implement association based rules mining approaches on real world case studies
				CO 4. Instrument data warehousing and OLAP concepts on complex data objects
				CO 5. Experiment the advancement in mining techniques for wide variety of areas
77.	VII	CS4312	Program Elective IV Lab - Software Testing and Quality Assurance Lab	CO 1. Describe the fundamental concepts of software testing and quality assurance.
				CO 2. Create and implement an effective software testing strategy.
				CO 3. Implement various test processes and continuous quality improvement.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				CO 4. Apply application of software testing techniques in commercial environments.
78.	VII	CS4332	Program Elective IV Lab - Wireless Networks Lab	CO 1. Comment on difference between wireless and wired networks and possible challenges in the design of wireless networks.
				CO 2. Identify design issues in various wireless technologies and discuss possible solutions for them.
				CO 3. Review architectures of various access technologies such as 3G, 4G, WiFi etc.
				CO 4. List challenges and possible solutions in various layers for Ad hoc networks
				CO 5. Demonstrate working of different types of wireless network applications.
79.	VII	CS4372	Program Elective V Lab - Software Engineering Lab	CO 1. Identify requirements and apply process model to selected case study.
				CO 2. Analyze and design models for the selected case study using UML modeling.
				CO 3. Use various software engineering tools.
80.	VII	CS4392	Program Elective V Lab - Advanced Software Engineering Lab	CO 1. A recapitulation of software engineering process models.
				CO 2. A recapitulation of the basic techniques for requirements engineering and design.
				CO 3. Project management, Maintenance and re-engineering.
				CO 4. Process and project metrics.
				CO 5. Estimation for software projects and Project scheduling.
81.	VIII	OE438	Finance for Engineers (Online Course.	CO 1. .Discuss the fundamental aspects of accounting and finance.
				CO 2. Apply rules of accounting while recording transactions.
				CO 3. Prepare financial statements and analyze financial position of the firm by applying various techniques.
				CO 4. Describe the various long term sources of

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				finance available for the business organization.
82.	VIII	OE436	Engineering Management & Economics (Online Course.	CO1.Develop administrative, organizational and planning skills to execute engineering project.
				CO2.Develop bar chart/mile stone chart for the project.
				CO3.Analyze profit/cost data and carry out economic analysis to take optimal decision.
				CO4.Calculate depreciation as per various methods.
83.	VIII	IP4022	Internship & Project	CO1.Examine the functioning of the company on the terms of inputs, transformation process and the outputs (products and services)
				CO2. Develop an attitude to adjust with the company culture, work norms, code of conduct.
				CO3.Recognize and follow the safety norms, Code of conduct.
				CO4.Demonstrate the ability to observe, analyse and document the details as per the industry practices.
84.	VIII	OE436	Engineering Management & Economics (Online Course)	CO1.Develop administrative, organizational and planning skills to execute engineering project.
				CO2.Develop bar chart/mile stone chart for the project.
				CO3.Analyze profit/cost data and carry out economic analysis to take optimal decision.
				CO4.Calculate depreciation as per various methods
85.	VIII	RE4042	Research Project	CO1.Investigate the technical literature.
				CO2.Recognize and evaluate theories, practices, and/or research on a chosen topic by conducting a thorough literature review and submitting a written integrative, critical summary of the current literature.
				CO3.Design a research problem and develop a methodology.
				CO4.Develop and implement an advanced original research or creative project.
				CO5.Develop the ability to explain the conceptual viability of the project and describe

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				the major components involved.
				CO6.Develop the ability to explain how the project will impact the relevant body of work.
				CO7.Develop advanced discipline-relevant skills and competencies.
				Co8.Construct an accurate record of research performed.
				CO9.Write a research report and paper.
86.	VIII	ED4102	Project Management	CO1.Prepare business Plan for selected business.
				CO2.Make risk analysis& market analysis of selected project.
				CO3.Make risk analysis& market analysis of selected project
				CO4.Make financial appraisal of selected project.
87.		ED4042	Commercial Aspects of the Project	CO1.Interpret basic Financial Terminologies.
				CO2.Prepare & analyze financial statements.
				CO3.Prepare financial Plan for venture.
				CO4.Apply basic principles of marketing for various products.
				CO5.Prepare market survey.
				CO6.Apply knowledge of marketing management for selected business.
88.	VIII	ED4062	Entrepreneurship Development Program (EDP)	CO 1. Apply knowledge of engineering, economics, marketing and finance for formulation of business plan, starting & managing new business.
89.	VIII	ED4082	Entrepreneurship Development Project	CO1.Apply knowledge of engineering, economics, marketing and finance for preparation of project report.
				CO2.Make commercial, technical and financial appraisal of project

Department Name: Computer Science & Engineering
PG Program Name: M.Tech in Computer Science & Engineering
Vision and Mission :-
Vision: To excel in the computer science engineering discipline through continuous research, innovation and industry-oriented curriculum leading to responsible IT professionals.
Mission:
1. To inculcate teaching and learning process promoting state-of-the-art IT industry practices in computer science engineering and technology to address global challenges.
2. To integrate academics, research and entrepreneurship skills to address present and future challenges of the society and industry.
3. To develop professionalism with strong foundations adapting to changing technology.

Sr. No.	Program Outcomes
1.	An ability to independently carry out research /investigation and development work to solve practical problems.
2.	An ability to write and present a substantial technical report/document.
3.	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
4.	Apply knowledge of database management systems, data mining and analytics techniques to solve real world problems.
5.	Apply knowledge of machine learning and intelligence to identify, formulate and solve complex engineering problems.
6.	Design, develop and deploy software using emerging IT technologies like open source tools, mobile application development platforms, web technologies and cloud computing.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
1.	Semester: I	CSE1130	Mathematical Foundations for Computer Science	Co:1-Solve problems using combinatorics in context to data science
				Co:2-Use relevant probability distribution and linear algebra to solve the engineering problems.
				Co:3-Explore the fundamental concepts of big data and its analytics
				Co:4-Analyze the big data science using statistical and inferential

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				techniques
				Co:5- Investigate data science solutions using advance tools system
2.	Semester: I	CSE1015	Machine Learning	Co:1- Set necessary mathematical background to understand Machine Learning concepts.
				Co:2- Recognize and appreciate need of Machine Learning in various applications.
				Co:3- Apply Classification and Regression techniques for decision making.
				Co:4- Use probabilistic graphical models to represent given problems.
				Co:5- Apply sequential data processing algorithms to solve problems.
3.	Semester: I	CSE1025	Advanced Algorithms	Co:1- Select appropriate algorithm design techniques such as greedy method, dynamic programming, backtracking and heuristic algorithms.
				Co:2- Explore different NP problems and approximation algorithmic solutions.
				Co:3- Apply backtracking algorithm to solve real world problems.
				Co:4- Apply and design parallel algorithms to solve fundamental problems.
				Co:5- Apply and compare performance of local search techniques algorithms for solving fundamental combinatorial problems.
				Co:6- Compare and design global search techniques for solving engineering/real-world combinatorial problems.
4.	Semester: I	Program Elective – I		
	Semester: I	CSE1035	Cryptology and Network Forensics	Co:1- Understand OSI security architecture and classic encryption techniques
				Co:2- Acquire fundamental

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				knowledge on the concepts of finite fields and number theory
				Co:3- Understand various block cipher and stream cipher models
				Co:4- Describe the principles of public key cryptosystems, hash functions and digital signature
				Co:5- Understand and the principles of network forensics and investigate network frauds
	Semester: I	CSE1045	Cloud Computing	Co:1- Compare cloud computing with other computing technologies.
				Co:2- Illustrate the virtualization technologies and its role in enabling the cloud computing system model.
				Co:3- Identify and compare different cloud service and deployment models for scientific, business and consumer applications.
				Co:4- Describe Aneka platform as a service to design different applications.
				Co:5- Compare different cloud services with pros and cons from multiple cloud providers.
				Co:6- Describe recent advances in cloud framework/services for solving scientific and business applications.
	Semester: I	CSE1055	Open Source Technologies	Co:1- Demonstrate the configuration of software services on servers.
				Co:2- Exercise the FOSS tools for the software development.
				Co:3- Contribute to existing FOSS in FOSS environment.
				Co:4- Ability to use a version control system and to interface with version control systems used by development communities.
5.	Semester: I	Program Elective – II		
	Semester: I	CSE1065	Natural Language Processing	Co:1- Acquire knowledge of the fundamental mathematical models and algorithms in the field of

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				NLP.
				Co:2- Apply these mathematical models and algorithms in applications in software design and implementation for NLP.
				Co:3- Apply deep learning models to solve machine translation and conversation problems.
				Co:4- Apply deep structured semantic models on information retrieval and natural language applications.
				Co:5- Acquire knowledge of the design and implementation issues in various NLP applications such as information extraction and Machine translation.
	Semester: I	CSE1071	Computer Vision	Co:1- Understand Image formation process.
				Co:2- Apply fundamental image processing techniques required for computer vision.
				Co:3- Analyze 3-D vision.
				Co:4- Use 3-D vision analysis for specific applications.
				Co:5- Generate appropriate 3D model from images.
	Semester: I	CSE1085	Adhoc Sensor Network	Co:1- Discuss the design and research issues in wireless networks
				Co:2- Demonstrate the working of 802.11 a/g/n wireless standards
				Co:3- Apply the different types of routing protocols in ad-hoc networks.
				Co:4- Analyze different protocols in MAC, Routing and Transport Control for Sensor Networks
6.	Semester: I	CSE1095	Research Methodology and IPR	Co:1- Formulate a research problem.
				Co:2- Analyze research related information.
				Co:3- Prepare and present research proposal / paper by following research ethics.
				Co:4- Make effective use of computers and computing tools to search information, analyze

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				information and prepare report.
				Co:5- Describe nature and processes involved in development of intellectual property rights.
7.	Semester: I	CSE1105	Machine Learning Laboratory	Co:1- Set necessary mathematical background to understand Machine Learning concepts.
				Co:2- Recognize and appreciate need of Machine Learning in various applications.
				Co:3- Apply Classification and Regression techniques for decision making.
				Co:4- Use probabilistic graphical models to represent given problems.
				Co:5- Apply sequential data processing algorithms to solve problems.
8.	Semester: I	CSE1115	Advanced Algorithms Laboratory	Co:1- Select appropriate algorithm design techniques such as greedy method, dynamic programming, backtracking and heuristic algorithms.
				Co:2- Apply backtracking algorithm to solve real world problems.
				Co:3- Explore different NP problems and approximation algorithmic solutions.
				Co:4- Apply and design parallel algorithms to solve fundamental problems.
				Co:5- Apply and compare performance of local search techniques algorithms for solving fundamental combinatorial problems.
				Co:6- Compare and design global search techniques for solving engineering/real-world combinatorial problems.
9.	Semester: I	CSE1125	Seminar	Co:1- Explore research areas and problems.
				Co:2- Present the finding of literature survey / review.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				Co:3- Find reputed journals and conference in relevant filed.
10	Semester: I	SHP5511	Technical Communication	Co:1- Use grammatically correct sentences in different types of technical writings.
				Co:2- Apply technical writing skills to improve readability of documents.
				Co:3- Demonstrate professional skills required in job interviews and at workplace.
11	Semester: II	CSE1151	Deep Learning	Co:1- Compare Machine Learning and Deep Learning approaches to solve problems; understand usefulness of each one.
				Co:2- Understand how Deep Learning solves problems which Machine Learning cannot.
				AnalyzeConvolutional networks.
				Co:3- Evaluate Convolutional networks.
				Co:4- Develop deep learning concept for different real-time applications.
12	Semester: II	CSE1165	Big Data Analytics	Co:1- Analyze big data for business intelligence
				Co:2- Explore business case studies for big data analytics
				Co:3- Implement map-reduce analytics using hadoop related advance frameworks
				Co:4- Apply NoSQL big data management
				Co:5- Manage big data with aspects of Security, Privacy and ethics
	Semester: II	Program Elective – III		
	Semester: II	CSE1175	Web Application Development	Co:1- Gain technical competencies in web application development and maintenance.
				Co:2- Implement interactive web pages and apply validation checks using client side programming languages like HTML, CSS, Java Script and AngularJS.
				Co:3- Process the business data and generate responses

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				dynamically using PHP.
				Co:4- Design and develop web services.
				Co:5- Use Django Python framework to design interactive web applications
	Semester: II	CSE1185	Parallel Computing	Co:1- Explain how massive parallelisms are implemented in accelerator architectures.
				Co:2- Design and implement parallel algorithms for GPGPU.
				Co:3- Demonstrate parallel patterns for performance improvement.
				Co:4- Analyze the parallel programming and computational thinking strategies.
				Co:5- Compare different Parallel algorithms from various application domains for performance analysis.
	Semester: II	CSE1195	Internet of Things	Co:1- Identify and understand the unique characteristics and components of IoT
				Co:2- Compare various development boards Arduino, Raspberry pi, Beagle bone
				Co:3- Design a middleware for IoT
				Co:4- Analyze various protocols for IoT
				Co:5- Compare various IoT communication technologies and Design various IoT applications
13	Semester: II	Program Elective – IV		
	Semester: II	CSE1205	Soft Computing	Co:1- Identify and describe soft computing techniques and their roles in building intelligent machines.
				Co:2- Apply fuzzy logic and reasoning to handle uncertainty and solve various engineering problems.
				Co:3- Design artificial neural network for solving real world problems.
				Co:4- Apply genetic algorithms to combinatorial optimization problems.
				Co:5- Evaluate solutions by various evolutionary approaches for a given

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				problem.
				Co:6- Design hybrid algorithms for solving complex problems.
	Semester: II	CSE1215	Block Chain Technology	Co:1- Identify basic cryptographic primitives utilised in Blockchain-Secure, collision-resistant hash functions, digital signatures, public key cryptosystems, and zero-knowledge proof systems
				Co:2- Explain basic Distributed System concepts – distributed consensus and atomic broadcast, Byzantine fault-tolerant consensus methods
				Co:3- Compare Basic Blockchain (Blockchain 1.0), Blockchain 2.0 and Blockchain 3.0
				Co:4- Design various Blockchain applications
	Semester: II	CSE1225	Software Architecture	Co:1- Recognize major software architectural styles, design patterns, and frameworks
				Co:2- Describe a software architecture using various documentation approaches and architectural description languages
				Co:3- Design and develop software architecture for large scale software systems
				Co:4- Formulate architectural alternatives for a problem and select among them
				Co:5- Apply well-understood paradigms for designing new systems
14	Semester: II	CSE1231	Deep Learning Laboratory	Co:1- Get knowledge about implementing Deep Learning algorithms.
				Co:2- Acquire knowledge about advanced Machine Learning concept.
				Co:3- Analyze and evaluate convolutional networks, RNNs, LSTM, Adam, Dropout
				Co:4- Work in team to develop and implement deep learning algorithms.

Sr. No.	Semester	Course Code	Course Name	Course Outcome
15	Semester: II	CSE1245	Big Data Analytics Laboratory	Co:1- Identify and investigate the distributed underlying experimental bed of Hadoop
				Co:2- Compare the usage of Map-reduce paradigm for parallel execution
				Co:3- Recognize the NoSQL prototype to build the big data management
				Co:4- Apply the skills to construct NoSQL designs and its manipulation
				Co:5- Visualizing business benefits from unstructured data analysis
16	Semester: II	Program Elective -III Laboratory		
	Semester: II	CSE1255	Web Application Development Laboratory	Co:1- Gain technical competencies in web application development and maintenance.
				Co:2- Implement interactive web pages and apply validation checks using client-side programming languages like HTML, CSS, Java Script and AngularJS.
				Co:3- Process the business data and generate responses dynamically using PHP.
				Co:4- Design and develop web services.
				Co:5- Use Django Python framework to design interactive web applications.
	Semester: II	CSE1265	Parallel Computing Laboratory	Co:1- Design different parallel algorithms suitable for multi-core and many-core systems.
				Co:2- Implement different parallel algorithms on multi-core and many-core systems.
				Co:3- Solve compute intensive problems/develop applications using accelerators.
				Co:4- Perform the analysis with different performance metrics.
	Semester: II	CSE1275	Internet of Things Laboratory	Co:1- Identify the components of IoT
				Co:2- Design a middleware for

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				IoT
				Co:3- Develop IoT application to solve social problems
				Co:4- Analyze various protocols for IoT
				Co:5- Establish the communication to the cloud through Wi-Fi / Bluetooth
17	Semester: II	CSE1285	Mini Project	Co:1- Identify and formulate research problem.
				Co:2- Identify and implement suitable techniques for research problems.
				Co:3- Analyze the results with appropriate tools and techniques available.
				Co:4- Present the finding of experimental details and result.
18	Semester: II	SHP552	Framework of Indian Constitution	Co:1- Realise the significance of constitution of India to students from all walks of life and help them to understand the basic concepts of Indian constitution.
				Co:2- Identify the importance of fundamental rights as well as fundamental duties
				Co:3- Understand the functioning of Union, State and Local Governments in Indian federal system
				Co:4- Learn procedure and effects of emergency, composition and activities of election commission and amendment procedure.
19	Semester: II	CSE2015	Industry Internship	Co:1- Acquire sufficient knowledge in respective Industry / advanced IT Technology.
				Co:2- Identify problems in the process in industry and provide solution to the same /
				Co:3- Implement small demonstrative module using learning got through the professional certification.
20	Semester: III	Open Elective		
	Semester:	MOE2011	Artificial	Co:1- Describe central machine

Sr. No.	Semester	Course Code	Course Name	Course Outcome
	III		Intelligence - Machine Learning	learning methods and techniques and how they relate to artificial intelligence.
				Co:2- Differentiate between supervised and unsupervised learning techniques
				Co:3- Apply the ML algorithms to a real-world problem,
				Co:4- Optimize the models learned and report on the expected accuracy that can be achieved by applying the models.
				Co:5- Evaluate a given problem and apply appropriate machine learning technique
	Semester: III	MOE2021	Creative Thinking: Techniques &Tools	Co:1- Comprehend importance in tackling global challenges as well as in everyday problem-solving scenarios
				Co:2- Apply different brainstorming techniques in group activities
				Co:3- Be proficient in the application of the 6 thinking hats tool in different life scenarios
				Co:4- Develop a systematic approach to idea generation through the use of morphological analysis
				Co:5- Innovate on an existing product, service or situation applying the SCAMPER method
				Co:6- Get confident with the theory of inventive problem solving, called TRIZ
	Semester: III	MOE2031	MOOC Course	Co:1- Identify the real applications and practices of courses studied, at industry level
				Co:2- Recognize various modelling, analysis and validation techniques adopted at industries.
				Co:3- Demonstrate the issues at design, manufacturing and assembly levels.
				Co:4- Summarize and present technical data in report format.
	Semester: III	MOE2041	Condition Monitoring and	Co:1- Identify the maintenance scheme, their scope and

Sr. No.	Semester	Course Code	Course Name	Course Outcome
			Signal Processing	limitations – apply the maintenance strategies to various problems in the industrial sectors.
				Co:2- Analyze for machinery condition monitoring and explain how this compliments monitoring the condition.
				Co:3- Develop an appreciation for the need of modern technological approach for plant maintenance to reduce the maintenance expenditure.
				Co:4- Emphasizes on case studies that require gathering information using the modern testing equipment and processing it to identify the malfunction in that system.
				Co:5- Identify vibration measurement, lubrication oil analysis.
	Semester: III	MOE2051	Aircraft Conceptual Design	Co:1- Analyze the design process of aircraft and decide the aircraft configuration.
				Co:2- Choose type of power plant as per flight regime.
				Co:3- Design the fuselage layout as per type of aircraft.
				Co:4- Design the wing for type of aircraft and its wing loading
				Co:5- Evaluate lift, drag and mass for design synthesis process.
				Co:6- Examine the influence of various design requirements on the configuration of an aircraft to derive an optimized design
	Semester: III	MOE2060	Augmented Reality and Virtual Reality	Co:1- Define the basic concepts of Virtual and Augmented Reality
				Co:2- Identify the differences in AR/VR concepts and technologies
				Co:3- Describe the fundamental concepts relating to Virtual Reality such as presence, immersion and engagement
				Co:4- Evaluate usability of AR/VR applications and critique their use of AR/VR capabilities
				Co:5- Design and prototype

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				effective AR/VR applications using UNITY platform for various application.
	Semester: III	MOE2070	Industrial Instrumentation	Co:1- Elaborate working principal of different transducers.
				Co:2- Select suitable transducer/sensor for specific application.
				Co:3- Justify the use of specific measurement technique for specific task.
				Co:4- Evaluate the Calibration and Interfacing of the transducers.
		MOE2080	Advanced Mechatronics systems	Co:1- Explain Mechatronics System
				Co:2- Analyze the Mechatronics Based System
				Co:3- Model, simulate, and verify the mechatronics systems.
				Co:4- Identify Electrical, Hydraulic and Pneumatic Components.
21	Semester: III	CSE2035	Dissertation Phase-I	Co:1- Identify domain, sub-domain and problem statement for the Study.
				Co:2- Perform a literature survey and identify possible gaps in the existing work in context with identified problem statement.
				Co:3- Formulate the problem statement and its objectives of project.
				Co:4- Selection of suitable methodology, techniques and dataset for the research work.
				Co:5- Write synopsis using standard format with technical aspects and language.
22	Semester: III	CSE2045	Dissertation Phase-II	Co:1- Design and develop bench-marking system which complies expectations and technical specifications mentioned in the Synopsis.
				Co:2- Perform experimental observation and analysis of the bench-marking system.
				Co:3- Identify gap and propose possible improvements in the implemented bench-marking system.
				Co:4- Submit an research article to

Sr. No.	Semester	Course Code	Course Name	Course Outcome
				reputed international conference which should be based on work done till Dissertation Phase 2.
				Co:5- Prepare a comprehensive, technically and grammatically correct Dissertation Phase 2 report describing the work done.
23	Semester: IV	CSE2055	Dissertation Phase-III	Co:1- Identify research gap or opportunities for novel work in selected problem statement or domain.
				Co:2- Define the problem based on identified research gap.
				Co:3- Develop algorithm/ methodology to address the identified research gap/ provide solution to the selected problem.
				Co:4- Write pseudo code/develop flow-chart/ develop working flow of proposed system.
				Co:5- Implement the proposed approach using required tools.
24	Semester: IV	CSE2065	Dissertation Phase-IV Viva-Voce	Co:1- Develop / simulate / implement the proposed system by complying with desired technical specifications.
				Co:2- Compare working and experimental results of the proposed system with the existing system.
				Co:3- Analyze and synthesize obtained results in theoretical and practical context.
				Co:4- Present findings in logical order and write Dissertation Report on basis of work done, results and observations, findings, and contributions.
				Co:5- Submit an research article to reputed international conference which should be based on work done.