Course Outcomes

Regulation 2021

Course Name	Course Outcomes
SEMESTER I	
HS3152- PROFESSIONAL ENGLISH - I	CO1:Apply appropriate words in a professional context CO2:Apply the basic grammatic structures and use them in right context. CO3:Apply the denotative and connotative meanings of technical texts CO4: Write definitions, descriptions, narrations and essays on various topics CO5: Apply basic grammar principles and be able to synthesize and transform sentences.
MA3151 MATRICES AND CALCULUS	CO1:Apply the matrix algebra methods for solving practical problems. CO2:Apply differential calculus tools in solving various application problems. CO3:Apply the differential calculus ideas on several variable functions. CO4:Apply different methods of integration in solving practical problems. CO5:Apply multiple integral ideas in solving areas, volumes and other practical problems
PH3151 ENGINEERING PHYSICS	CO1:Apply the basic concepts of mechanics and kinematics. CO2: Analyze electromagnetic waves and applications CO3:Apply the knowledge in oscillations, optics and laser CO4: Develop the prime significance in the concepts of quantum mechanics CO5: Apply the fundamental ideas on the applications of quantum mechanics
CY3151 ENGINEERING CHEMISTRY	CO1: Analyse the quality of water from quality parameter data and propose suitable treatment methodologies to treat water. CO2: Identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications. CO3: Apply the knowledge of phase rule and composites for material selection requirements CO4:Apply suitable fuels for engineering processes and applications. CO5:Design different forms of energy resources and apply them for suitable applications in energy sectors.
GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING	CO1: Develop algorithmic solutions to simple computational problems. CO2: Develop and execute simple Python programs. CO3: Develop simple Python programs using conditionals and loops for solving problems CO4: Develop a Python program into functions. CO5: Develop compound data using Python lists, tuples, dictionaries etc. CO6: Apply statements to read and write data from/to files in Python programs

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GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	CO1: Develop algorithmic solutions to simple computational problems CO2: Develop and execute simple Python programs. CO3: Develop programs in Python using conditionals and loops for solving problems. CO4: Apply functions to decompose a Python program. CO5: Design compound data using Python data structures. CO6: Apply Python packages in developing software applications.
BS3171 PHYSICS AND CHEMISTRY LABORATORY	CO1: Analyse the functioning of various physics laboratory equipment. CO2: Apply graphical models to analyze laboratory data. CO3: Develop mathematical models as a medium for quantitative reasoning and describing physical reality. CO4: Analyze, Access and process scientific information. CO5: Develop solutions for problems individually and collaboratively.
GE3172 ENGLISH LABORATORY	CO1:Apply general as well as complex academic information CO2:Analyse different points of view in a discussion CO3:Develop fluent and accurate in formal and informal communicative contexts CO4: Develop products and processes and explain their uses and purposes clearly and accurately CO5:Analyse opinions effectively in both formal and informal discussions
SEMESTER II	
HS3252 PROFESSIONAL ENGLISH - II	CO1: Analyze products and ideas in technical texts. CO2: Identify and report cause and effects in events, industrial processes through technical texts CO3: Analyze problems in order to arrive at feasible solutions and communicate them in the written format. CO4:Analyse ideas and opinions in a planned and logical manner CO5: Write effective resumes in the context of job search.
MA3251 STATISTICS AND NUMERICAL METHODS	CO1:Apply the concept of testing of hypothesis for small and large samples which play important role in real life problems. CO2:Design the experiments and analyze the data to carry out the experiments. CO3:Apply the basic concepts of solving algebraic and transcendental equations. CO4:Apply numerical techniques of interpolation in various intervals and numerical techniques of differentiation and integration. CO5:Apply the knowledge of various techniques and methods of solving ordinary differential equations.

Course Name	Course Outcomes
PH3256 PHYSICS FOR INFORMATION SCIENCE	CO1:Apply knowledge on the fundamental electrical properties of materials. CO2:Apply the knowledge on basics of semiconductor. CO3: Analyze the sound knowledge of magnetic materials. CO4:Analyze the concepts of optical properties and its displays. CO5 :Identify the concepts of nano, quantum computing devices.
BE3251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	CO1: Compute the electric circuit parameters for simple problems. CO2: Analyse the working principle and applications of electrical machines CO3: Analyze the characteristics of analog electronic devices CO4: Apply the basic concepts of digital electronics CO5: Analyze the operating principles of measuring instruments
GE3251 ENGINEERING GRAPHICS	CO1:Apply BIS conventions and specifications for engineering drawing. CO2: Construct the conic curves, involutes and cycloid. CO3: Develop solution for practical problems involving projection of lines. CO4:Design the orthographic, isometric and perspective projections of simple solids. CO5: Analyse the development of simple solid.
CS3251 PROGRAMMING IN C	CO1: Apply knowledge on C Programming constructs. CO2: Develop simple applications in C using basic constructs CO3: Design and implement applications using arrays and strings CO4: Develop and implement modular applications in C using functions. CO5: Develop applications in C using structures and pointers. CO6: Design applications using sequential and random access file processing.
GE3271 ENGINEERING PRACTICES LABORATORY	CO1:Design pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work. CO2: Apply various electrical joints in common household electrical wire work. CO3:Apply various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work. CO4:Design Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.
CS3271 PROGRAMMING IN C LABORATORY	CO1: Demonstrate knowledge on C programming constructs. CO2: Develop programs in C using basic constructs. CO3: Develop programs in C using arrays. CO4: Develop applications in C using strings, pointers, functions. CO5: Develop applications in C using structures. CO6: Develop applications in C using file processing.

Course Name	Course Outcomes
GE3272 COMMUNICATION LABORATORY	CO1:Apply the knowledge effectively in group discussions held in a formal/semi formal contexts. CO2:Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions CO3:Write emails, letters and effective job applications. CO4:Analyse critical reports to convey data and information with clarity and precision CO5: Apply appropriate instructions and recommendations for safe execution of tasks.
SEMESTER III	
MA3354 DISCRETE MATHEMATICS	CO1:Apply the concepts needed to test the logic of a program CO2: Design structures on many levels. CO3: Analyze the class of functions which transform a finite set into another finite set which relates to input and output functions in computer science. CO4: Develop the knowledge of the counting principles. CO5:Analyze the concepts and properties of algebraic structures such as groups, rings and fields
CS3351 DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	CO 1: Design various combinational digital circuits using logic gates. CO 2: Design sequential circuits and analyze the design procedures. CO 3: Identify the fundamentals of computer systems and analyze the execution of an instruction. CO 4: Analyze different types of control design and identify hazards. CO5: Identify the characteristics of various memory systems and I/O communication.
CS3352 FOUNDATIONS OF DATA SCIENCE	CO1: Apply and analyze the data science process CO2: Analyze different types of data description for data science process CO3: Apply knowledge on relationships between data CO4: Apply Python Libraries for Data Wrangling CO5: Apply visualization Libraries in Python to interpret and explore data.
CS3301 DATA STRUCTURES	CO1: Apply linear and non-linear data structures. CO2: Design linear and non–linear data structure operations. CO3: Apply appropriate linear/non–linear data structure operations for solving a given problem. CO4: Apply appropriate graph algorithms for graph applications. CO5: Analyze the various searching and sorting algorithms.
CS3391 OBJECT ORIENTED PROGRAMMING	CO 1:Develop Java programs using OOP principles CO2:Develop programs using inheritance, packages and interfaces CO3:Apply exception handling mechanisms and multithreaded model to solve real world problems CO4: Develop Java applications with I/O packages, string classes, Collections and generics concepts. CO5: Apply the concepts of event handling and JavaFX components and controls for developing GUI based applications

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CS3311 DATA STRUCTURES LABORATORY	CO1: Apply Linear data structure algorithms. CO2:Develop an applications using Stacks and Linked lists CO3: Develop Binary Search tree and AVL tree operations. CO4: Apply and analyze various graph algorithms. CO5: Analyze the various searching and sorting algorithms.
CS3381 OBJECT ORIENTED PROGRAMMING LABORATORY	CO1 : Design and develop java programs using object oriented programming. CO2 : Develop simple applications using object oriented concepts such as package, exceptions CO3 : Create GUIs and event driven programming applications for real world problems CO4: Apply multithreading, and generics concepts. CO5: Develop and deploy web applications using Java.
CS3361 DATA SCIENCE LABORATORY	CO1: Apply python libraries for data science. CO2: Analyze the basic Statistical and Probability measures for data. CO3: Apply descriptive analytics on the benchmark data sets. CO4: Analyze correlation and regression analytics on standard data sets. CO5: Develop and interpret data using visualization packages in Python.
GE3361 PROFESSIONAL DEVELOPMENT	CO1:Apply MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements CO2: Apply MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding CO3:Apply MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.
SEMESTER IV	
CS3452 THEORY OF COMPUTATION	CO1: Construct automata theory using Finite Automata CO2: Construct regular expressions for any pattern CO3: Design context free grammar and Pushdown Automata CO4: Design Turing machine for computational functions CO5: Analyze decidable and undecidable problems.
CS3491 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	CO1: Apply appropriate search algorithms for problem solving CO2: Apply reasoning under uncertainty CO3: Build supervised learning models CO4: Build assembling and unsupervised models CO5: Build deep learning neural network models
CS 3492 DATABASE MANAGEMENT SYSTEMS	CO1: Construct SQL Queries using relational algebra CO2: Design database using ER model and normalize the database CO3: Construct queries to handle transaction processing and maintain consistency of the database CO4: Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database CO5: Appraise how advanced databases differ from Relational Databases and find a suitable database for the given requirement.

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CS3401 ALGORITHMS	CO1: Analyze the efficiency of algorithms using various frameworks CO2: Apply graph algorithms to solve problems and analyze their efficiency. CO3: Analyze algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems CO4: Apply state space tree method for solving problems. CO5: Develop Solutions for problems using approximation algorithms and randomized algorithms
CS 3452 INTRODUCTION TO OPERATING SYSTEMS	CO1 : Analyze various scheduling algorithms and process synchronization. CO2 : Analyze deadlock prevention and avoidance algorithms. CO3 : Analyze various memory management schemes. CO4 : Apply the various functionality of file systems, I/O systems, and Virtualization. CO5 : Identify and apply the operating system for appropriate applications.
GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY	CO1:Identify and apply the functions of environment, ecosystems and biodiversity and their conservation. CO2:Identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society. CO3: Identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations. CO4: Analyze the different goals of sustainable development and apply them for suitable technological advancement and societal development. CO5: Apply the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
CS3451 OPERATING SYSTEMS LABORATORY	CO1 : Design and implement UNIX Commands. CO2 : Analyze the performance of various CPU Scheduling Algorithms. CO3 : Analyze various Memory Allocation Methods. CO4 : Design File Organization and File Allocation Strategies. CO5 : Analyze various Disk Scheduling Algorithms.
CS3481 DATABASE MANAGEMENT SYSTEMS LAB	CO1: Design databases with different types of key constraints. CO2: Construct simple and complex SQL queries using DML and DCL commands. CO3: Apply advanced features such as stored procedures and triggers and incorporate in GUI based application development. CO4: Create an XML database and validate with meta-data (XML schema). CO5: Create and Analyze data using NOSQL database.size and complexity.
SEMESTER – V	
CS3591 COMPUTER NETWORKS	CO 1: Identify the layer functions in Computer Networks CO 2: Analyze the data flow from one node to another node. CO 3: Analyze routing algorithms. CO 4: Discuss protocols for various functions in the network. CO 5: Analyze the working of various application layer protocols.

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CS3501 COMPLIER DESIGN	CO1: Analyze the different phases of compiler. CO2: Design a lexical analyzer for a sample language CO3: Apply different parsing algorithms to develop the parsers for a given grammar. CO4: Apply semantics rules (SDT), intermediate code generation and run-time environment. CO5: Apply code generation and code optimization techniques.
CB3491 CRYPTOGRAPHY AND CYBER SECURITY	CO1: Apply the fundamentals of networks security, security architecture, threats and vulnerabilities. CO2: Apply the different cryptographic operations of symmetric cryptographic algorithms. CO3: Apply the different cryptographic operations of public key cryptography. CO4: Analyze the various Authentication schemes to simulate different applications. CO5: Analyze various cyber crimes and cyber security.
CCS349 IMAGE AND VIDEO ANALYTICS	CO1: Apply the basics of image processing techniques for computer vision and video analysis. CO2: Discuss the techniques used for image pre-processing. CO3: Develop various object detection techniques. CO4: Apply the various face recognition mechanisms. CO5: Discuss on deep learning-based video analytics.
CCS375 WEB TECHNOLOGIES	CO1: Construct a basic website using HTML and Cascading Style Sheets CO2: Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms. CO3: Develop server side programs using Servlets and JSP. CO4: Construct simple web pages in PHP and to represent data in XML format. CO5: Develop interactive web applications
CS3551 DISTRIBUTRED COMPUTING	CO1: Discuss the foundations of distributed systems. CO2: Develop the solution for synchronization and state consistency problems. CO3 Apply resource sharing techniques in distributed systems. CO4: Apply working model of consensus and reliability of distributed systems. CO5: Discuss the fundamentals of cloud computing.
SEMESTER VI	
CCS356 OBJECT ORIENTED SOFTWARE ENGINEERING	CO1: Analyze various Software Development Lifecycle Models CO2: Develop project management approaches as well as cost and schedule estimation strategies. CO3: Discuss formal analysis on specifications. CO4: Apply UML diagrams for analysis and design. CO5: Design and architect using architectural styles and design patterns

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CS3691 EMBEDDED SYSTEMS AND IOT	CO1: Design the architecture of embedded processors. CO2: Develop embedded C programs. CO3: Design simple embedded applications. CO4: Analyze the communication models in IOT CO5: Design IoT applications using Arduino/Raspberry Pi /open platform.
OIE351 INTRODUCTION TO INDUSTRIAL ENGINEERING	CO1: Apply the concepts of productivity and productivity measurement approaches. CO2: Apply appropriate location models for various facility types and design various facility layouts CO3: Develop a method and time study to improve the efficiency of the system. CO4: Analyze the quality of processes using control charts in manufacturing/service industries. CO5: Develop the Planning strategies and Material Requirement Plan.
CCS332 APP DEVELOPMENT	CO1:Develop Native applications with GUI Components. CO2:Develop hybrid applications with basic event handling. CO3: Design cross-platform applications with location and data storage capabilities. CO4: Design cross platform applications with basic GUI and event handling. CO5: Develop web applications with cloud database access.
CCS344 ETHICAL HACKING	CO1: Apply knowledge on basics of computer based vulnerabilities. CO2: Analyze different foot printing, reconnaissance and scanning methods. CO3: Develop the enumeration and vulnerability analysis methods CO4: Apply the knowledge on hacking options available in Web and wireless applications. CO5: Apply the knowledge on the options for network protection and to expose the vulnerabilities.
CCS333 AUGMENTED REALITY/VIRTUAL REALITY	CO1: Apply the basic concepts of AR and VR CO2: Analyze the tools and technologies related to AR/VR. CO3:Discuss working principle of AR/VR related Sensor devices CO4: Design of various models using modeling techniques. CO5: Develop AR/VR applications in different domains.
CCS361 ROBOTIC PROCESS AUTOMATION	CO1: Analyze the key distinctions between RPA and existing automation techniques and platforms. CO2: Apply UiPath to design control flows and work flows for the target process. CO3:Develop recording, web scraping and process mining by automation. CO4: Apply UIPath Studio to detect, and handle exceptions in automation processes. CO5: Apply and use Orchestrator for creation, monitoring, scheduling, and controlling of automated bots and processes.
MX3089 INDUSTRIAL SAFETY	CO1: Discuss d the basic concept of safety. CO2: Apply knowledge of Statutory Regulations and standards. CO3: Discuss about the safety Activities of the Working Place. CO4: Analyze on the impact of Occupational Exposures and their Remedies. CO5: Apply knowledge of Risk Assessment Techniques

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SEMESTER VII	
GE3791 HUMAN VALUES AND ETHICS	CO1: Construct a basic perception on various moral, human values and ethics. CO2:Identify and analyze profession, professional ethics, moral issues and the role of ethical theories in engineering field CO3: Identify an insight of social responsibilities and the code of ethics to be followed by an engineer. CO4: Identify the professional rights and responsibilities of an engineer for safety and risk benefit analysis. CO5:Apply ethical principles to resolve situations that arise in their professional lives
GE3752 TOTAL QUALITY MANAGEMENT	CO1: Ability to apply TQM concepts in a selected enterprise. CO2: Ability to apply TQM principles in a selected enterprise. CO3: Ability to understand Six Sigma and apply Traditional tools, New tools, Benchmarking andFMEA. CO4: Ability to understand Taguchi's Quality Loss Function, Performance Measures and apply QFD, TPM, COQ and BPR. CO5: Ability to apply QMS and EMS in any organization.
AI3021 IT IN AGRICULTURAL SYSTEM	CO1:The students shall be able to understand the applications of IT in remote sensing applications such as Drones etc. CO2:The students will be able to get a clear understanding of how a greenhouse can be automated and its advantages. CO3:The students will be able to apply IT principles and concepts for management of field operations. CO4:The students will get an understanding about weather models, their inputs and applications. CO5:The students will get an understanding of how IT can be used for e-governance in agriculture.
ORA351 FOUNDATION OF ROBOTICS	CO1: Interpret the features of robots and technology involved in the control. CO2: Apply the basic engineering knowledge and laws for the design of robotics. CO3: Explain the basic concepts like various configurations, classification and parts of end effectors compare various end effectors and grippers and tools and sensors used in robots. CO4: Explain the concept of kinematics, degeneracy, dexterity and trajectory planning. CO5: Demonstrate the image processing and image analysis techniques by machine vision system.
CRA332 DRONE TECHNOLOGIES	CO1: Know about a various type of drone technology, drone fabrication and programming. CO2: Execute the suitable operating procedures for functioning a drone CO3: Select appropriate sensors and actuators for Drones CO4: Develop a drone mechanism for specific applications CO5: Createthe programs for various drones

Course Name	Course Outcomes
CS3711 SUMMER INTERNSHIP	CO1:Apply Industry Practices, Processes,Techniques, technology, automation and other core aspects of software industry. CO2: Analyze, Design solutions to complex business problems CO2: Analyze, Design solutions to complex business problems. CO3: Build and deploy solutions for target platform. CO4: Design and develop Technical reports and presentation. CO 5: Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.
SEMESTER VIII	
CS3811 PROJECT WORK/INTERNSHIP	CO1: Apply Domain knowledge and technical skill set required for solving industry / research problems. CO2: Develop solution architecture, module level designs, algorithms. CO3: Design, Develop, test and deploy the solution for the target platform. CO4: Develop detailed technical report, demonstrate and present the work CO 5:Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.