

Course Code / Course Name: HS3152/ PROFESSIONAL ENGLISH - I

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C101.1 | To use appropriate words in a professional context. |
| C101.2 | To gain understanding of basic grammatic structures and use them in right context. |
| C101.3 | To read and infer the denotative and connotative meanings of technical texts. |
| C101.4 | To write definitions, descriptions, narrations and essays on various topics. |
| C101.5 | Show the group discussion and face to face conversation for effective speaking. |

Course Code / Course Name: MA3151/ MATRICES AND CALCULUS

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C102.1 | To use appropriate words in a professional context. |
| C102.2 | To gain understanding of basic grammatic structures and use them in right context. |
| C102.3 | To read and infer the denotative and connotative meanings of technical texts. |
| C102.4 | To write definitions, descriptions, narrations and essays on various topics. |
| C102.5 | Show the group discussion and face to face conversation for effective speaking. |

Course Code / Course Name: PH3151/ ENGINEERING PHYSICS

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C103.1 | Understand the importance of mechanics. |
| C103.2 | Express their knowledge in electromagnetic waves. |
| C103.3 | Demonstrate a strong foundational knowledge in oscillations, optics and lasers. |
| C103.4 | Understand the importance of quantum physics. |
| C103.5 | Comprehend and apply quantum mechanical principles towards the formation of energy bands. |

Course Code / Course Name: CY3151/ ENGINEERING CHEMISTRY

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C104.1 | To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water |
| C104.2 | To identify and apply basic concepts of nano science and nanotechnology in designing the synthesis of nano materials for engineering and technology applications |
| C104.3 | To apply the knowledge of phase rule and composites for material selection requirements. |
| C104.4 | To recommend suitable fuels for engineering processes and applications. |
| C104.5 | To recognize different forms of energy resources and apply them for suitable applications in energy sectors. |

Course Code / Course Name: GE3151/ PROBLEM SOLVING AND PYTHON PROGRAMMING

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C105.1 | Develop algorithmic solutions to simple computational problems. |
| C105.2 | Write simple Python programs using conditionals and loops for solving problems. |
| C105.3 | Decompose a Python program into functions. |
| C105.4 | Represent compound data using Python lists, tuples, dictionaries etc. |
| C105.5 | Read and write data from/to files in Python programs. |

**Course Code / Course Name: GE3171/ PROBLEM SOLVING AND PYTHON PROGRAMMING
 LABORATORY**

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C106.1 | Develop algorithmic solutions to simple computational problems |
| C106.2 | Implement programs in Python using conditionals and loops for solving problems. |
| C106.3 | Deploy functions to decompose a Python program |
| C106.4 | Process compound data using Python data structures. |
| C106.5 | Utilize Python packages in developing software applications |

Course Code / Course Name: BS3171/ PHYSICS AND CHEMISTRY LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C107.1 | Understand the functioning of various physics laboratory equipment |
| C107.2 | Use graphical models to analyze laboratory data. |
| C107.3 | Use mathematical models as a medium for quantitative reasoning and describing physical reality. |
| C107.4 | Access, process and analyze scientific information. |
| C107.5 | Solve problems individually and collaboratively. |

Course Code / Course Name: GE3172/ ENGLISH LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C108.1 | To listen to and comprehend general as well as complex academic information |
| C108.2 | To listen to and understand different points of view in a discussion. |
| C108.3 | To speak fluently and accurately in formal and informal communicative contexts. |
| C108.4 | To describe products and processes and explain their uses and purposes clearly and accurately |
| C108.5 | To express their opinions effectively in both formal and informal discussions. |

Course Code / Course Name: HS3252 / PROFESSIONAL ENGLISH - II

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C109.1 | To compare and contrast products and ideas in technical texts. |
| C109.2 | To identify and report cause and effects in events, industrial processes through technical texts |
| C109.3 | To analyse problems in order to arrive at feasible solutions and communicate them in the written format. |
| C109.4 | To present their ideas and opinions in a planned and logical manner |
| C109.5 | To draft effective resumes in the context of job search. |

Course Code / Course Name: MA3251/ STATISTICS AND NUMERICAL METHODS

**DEPARTMENT OF INFORMATION TECHNOLOGY
 REGULATIONS 2021**

| CO No. | Course Outcomes (COs) |
|--------|---|
| C110.1 | Apply the concept of testing of hypothesis for small and large samples in real life problems. |
| C110.2 | Apply the basic concepts of classifications of design of experiments in the field of agriculture |
| C110.3 | Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems. |
| C110.4 | Understand the knowledge of various techniques and methods for solving first and secondorder ordinary differential equations |
| C110.5 | Solve the partial and ordinary differential equations with initial and boundary conditions byusing certain techniques with engineering applications |

Course Code / Course Name: PH3256/ PHYSICS FOR INFORMATION SCIENCE

| CO No. | Course Outcomes (COs) |
|--------|---|
| C111.1 | Apply the concept of testing of hypothesis for small and large samples in real life problems. |
| C111.2 | Apply the basic concepts of classifications of design of experiments in the field of agriculture |
| C111.3 | Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems. |
| C111.4 | Understand the knowledge of various techniques and methods for solving first and secondorder ordinary differential equations |
| C111.5 | Solve the partial and ordinary differential equations with initial and boundary conditions byusing certain techniques with engineering applications |

Course Code / Course Name: BE3251/ BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

| CO No. | Course Outcomes (COs) |
|--------|---|
| C112.1 | Compute the electric circuit parameters for simple problems. |
| C112.2 | Explain the working principle and applications of electrical machines |
| C112.3 | Analyze the characteristics of analog electronic devices. |
| C112.4 | Explain the basic concepts of digital electronics. |
| C112.5 | Explain the operating principles of measuring instruments |

Course Code / Course Name: GE3251 / ENGINEERING GRAPHICS

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C113.1 | Use BIS conventions and specifications for engineering drawing. |
| C113.2 | Construct the conic curves, involutes and cycloid. |
| C113.3 | Solve practical problems involving projection of lines. |
| C113.4 | Draw the orthographic, isometric and perspective projections of simple solids. |
| C113.5 | Draw the development of simple solids. |

Course Code / Course Name: CS3251/ PROGRAMMING IN C

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C114.1 | Demonstrate knowledge on C Programming constructs. |
| C114.2 | Develop simple applications in C using basic constructs |
| C114.3 | Design and implement applications using arrays and strings. |
| C114.4 | Develop and implement modular applications in C using functions |
| C114.5 | Develop applications in C using structures and pointers. |

Course Code / Course Name: GE3271/ ENGINEERING PRACTICES LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C115.1 | Draw 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 |
| C115.2 | Wire various electrical joints in common household electrical wire work. |
| C115.3 | Weld 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. |
| C115.4 | Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB. |
| C115.5 | Develop applications in C using structures and pointers. |

Course Code / Course Name: CS3271 / PROGRAMMING IN C LABORATORY

| CO No. | Course Outcomes (COs) |
|--------|---|
| C116.1 | Develop programs in C using basic constructs. |
| C116.2 | Develop programs in C using arrays. |
| C116.3 | Develop applications in C using strings, pointers, functions. |
| C116.4 | Develop applications in C using structures. |
| C116.5 | Develop applications in C using file processing. |

Course Code / Course Name: GE3272 / COMMUNICATION LABORATORY

| CO No. | Course Outcomes (COs) |
|--------|--|
| C117.1 | Speak effectively in group discussions held in a formal/semi formal contexts. |
| C117.2 | Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions |
| C117.3 | Write emails, letters and effective job applications. |
| C117.4 | Write critical reports to convey data and information with clarity and precision |
| C117.5 | Give appropriate instructions and recommendations for safe execution of tasks |

Course Code / Course Name: MA3354/ DISCRETE MATHEMATICS

| CO No. | Course Outcomes (COs) |
|--------|--|
| C201.1 | Have knowledge of the concepts needed to test the logic of a program. |
| C201.2 | Have an understanding in identifying structures on many levels. |
| C201.3 | Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science. |
| C201.4 | Be aware of the counting principles. |
| C201.5 | Be exposed to concepts and properties of algebraic structures such as groups, rings and fields. |

Course Code / Course Name: CS3351/ DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C202.1 | Design various combinational digital circuits using logic gates |
| C202.2 | Design sequential circuits and analyze the design procedures |
| C202.3 | State the fundamentals of computer systems and analyze the execution of an instruction |
| C202.4 | Analyze different types of control design and identify hazards |
| C202.5 | Identify the characteristics of various memory systems and I/O communication |

Course Code / Course Name: CS3352/ FOUNDATIONS OF DATA SCIENCE

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C203.1 | Explain the data science process |
| C203.2 | Interpret different types of data description for data science process |
| C203.3 | Identify knowledge on relationships between data |
| C203.4 | Make Use of Python Libraries for Data Wrangling |
| C203.5 | Apply visualization Libraries in Python to interpret and explore data |

Course Code / Course Name: CD3291/ DATA STRUCTURES AND ALGORITHMS

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C204.1 | Interpret Abstract Data Types, Object Oriented Programming concepts and fundamentals of algorithms using python. |
| C204.2 | Utilize list, stack and queue data structures to solve various computing problems. |
| C204.3 | Apply various sorting algorithms and searching techniques to meet requirements. |
| C204.4 | Apply efficient tree structures to meet requirements such as searching, indexing, and sorting. |
| C204.5 | Apply the non-linear Graph data structure to different computing problems. |

Course Code / Course Name: CS3391/ OBJECT ORIENTED PROGRAMMING

**DEPARTMENT OF INFORMATION TECHNOLOGY
 REGULATIONS 2021**

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C205.1 | Apply the concepts of classes and objects to solve simple problems |
| C205.2 | Develop programs using inheritance, packages and interfaces |
| C205.3 | Make use of exception handling mechanisms and multithreaded model to solve real world problems |
| C205.4 | Build Java applications with I/O packages, string classes, Collections and generics concepts |
| C205.5 | Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications |

Course Code / Course Name: CD3281/ DATA STRUCTURES AND ALGORITHMS LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C206.1 | Construct ADTs as Python classes. |
| C206.2 | Develop linear data structures, such as lists, queues, and stacks, according to the needs of different applications. |
| C206.3 | Make use of sorting, searching and hashing algorithms. |
| C206.4 | Develop efficient tree structures to meet requirements such as searching, indexing, and sorting. |
| C206.5 | Model problems as graph problems and implement efficient graph algorithms to solve them. |

Course Code / Course Name: CS3381/ OBJECT ORIENTED PROGRAMMING LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C207.1 | Design and develop java programs using object oriented programming concepts |
| C207.2 | Develop simple applications using object oriented concepts such as package, exceptions |
| C207.3 | Implement multithreading, and generics concepts |
| C207.4 | Create GUIs and event driven programming applications for real world problems |
| C207.5 | Implement and deploy web applications using Java |

Course Code / Course Name: CS3361/ DATA SCIENCE LABORATORY

**DEPARTMENT OF INFORMATION TECHNOLOGY
 REGULATIONS 2021**

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C208.1 | Make use of the python libraries for data science |
| C208.2 | Make use of the basic Statistical and Probability measures for data science. |
| C208.3 | Perform descriptive analytics on the benchmark data sets. |
| C208.4 | Perform correlation and regression analytics on standard data sets |
| C208.5 | Present and interpret data using visualization packages in Python |

Course Code / Course Name: CS3452/ THEORY OF COMPUTATION

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C209.1 | Construct automata theory using Finite Automata |
| C209.2 | Write regular expressions for any pattern |
| C209.3 | Design context free grammar and Pushdown Automata |
| C209.4 | Design Turing machine for computational functions |
| C209.5 | Differentiate between decidable and undecidable problems |

Course Code / Course Name: CS3491/ ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C210.1 | Make Use of appropriate search algorithms for problem solving |
| C210.2 | Apply reasoning under uncertainty |
| C210.3 | Build supervised learning models |
| C210.4 | Build ensembling and unsupervised models |
| C210.5 | Build deep learning neural network models |

Course Code / Course Name: CS3492/ DATABASE MANAGEMENT SYSTEMS

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C211.1 | Make Use of appropriate search algorithms for problem solving |
| C211.2 | Apply reasoning under uncertainty |
| C211.3 | Build supervised learning models |
| C211.4 | Build ensembling and unsupervised models |
| C211.5 | Build deep learning neural network models |

Course Code / Course Name: IT3401/ WEB ESSENTIALS

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C212.1 | Apply JavaScript, HTML and CSS effectively to create interactive and dynamic websites. |
| C212.2 | Create simple PHP scripts |
| C212.3 | Design and deploy simple web-applications. |
| C212.4 | Create simple database applications. |
| C212.5 | Handle multimedia components |

Course Code / Course Name: CS3451/ INTRODUCTION TO OPERATING SYSTEMS

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C213.1 | Analyze various scheduling algorithms and process synchronization. |
| C213.2 | Explain deadlock prevention and avoidance algorithms. |
| C213.2 | Compare and contrast various memory management schemes. |
| C213.4 | Explain the functionality of file systems, I/O systems, and Virtualization |
| C213.5 | Compare iOS and Android Operating Systems. |

Course Code / Course Name: GE3451/ ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

**DEPARTMENT OF INFORMATION TECHNOLOGY
 REGULATIONS 2021**

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C214.1 | To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation. |
| C214.2 | To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society. |
| C214.3 | To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations. |
| C214.4 | To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development. |
| C214.5 | To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization. |

Course Code / Course Name: CS3461/ OPERATING SYSTEMS LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C215.1 | Define and implement UNIX Commands. |
| C215.2 | Compare the performance of various CPU Scheduling Algorithms. |
| C215.3 | Compare and contrast various Memory Allocation Methods. |
| C215.4 | Define File Organization and File Allocation Strategies. |
| C215.5 | Implement various Disk Scheduling Algorithms. |

Course Code / Course Name: CS3481/ DATABASE MANAGEMENT SYSTEMS LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C216.1 | Create databases with different types of key constraints. |
| C216.2 | Construct simple and complex SQL queries using DML and DCL commands. |
| C216.3 | Use advanced features such as stored procedures and triggers and incorporate in GUI based application development. |
| C216.4 | Create an XML database and validate with meta-data (XML schema). |
| C216.5 | Create and manipulate data using NOSQL database. |

Course Code / Course Name: CS3591/ COMPUTER NETWORKS

**DEPARTMENT OF INFORMATION TECHNOLOGY
 REGULATIONS 2021**

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C301.1 | Explain the basic layers and its functions in computer networks. |
| C301.2 | Understand the basics of how data flows from one node to another |
| C301.3 | Analyze routing algorithms. |
| C301.4 | Describe protocols for various functions in the network. |
| C301.5 | Analyze the working of various application layer protocols. |

Course Code / Course Name: IT3501/ FULL STACK WEB DEVELOPMENT

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C302.1 | Understand the various stacks available for web application development |
| C302.2 | Use Node.js for application development |
| C302.3 | Develop applications with MongoDB |
| C302.4 | Use the features of Angular and Express |
| C302.5 | Develop React applications |

Course Code / Course Name: C S3551/ DISTRIBUTED COMPUTING

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C303.1 | Explain the foundations of distributed systems |
| C303.2 | Solve synchronization and state consistency problems |
| C303.3 | Use resource sharing techniques in distributed systems |
| C303.4 | Apply working model of consensus and reliability of distributed systems |
| C303.5 | Explain the fundamentals of cloud computing |

Course Code / Course Name: CS3691/ EMBEDDED SYSTEMS AND IOT

**DEPARTMENT OF INFORMATION TECHNOLOGY
 REGULATIONS 2021**

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C304.1 | Explain the architecture of embedded processors. |
| C304.2 | Write embedded C programs. |
| C304.3 | Design simple embedded applications. |
| C304.4 | Compare the communication models in IOT |
| C304.5 | Design IoT applications using Arduino/Raspberry Pi /open platform. |

Course Code / Course Name: IT3511/ FULL STACK WEB DEVELOPMENT LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C308.1 | Design full stack applications with clear understanding of user interface, business logic and data storage |
| C308.2 | Design and develop user interface screens |
| C308.3 | Implement the functional requirements using appropriate tool |
| C308.4 | Design and develop database based on the requirements |
| C308.5 | Integrate all the necessary components of the application |

Course Code / Course Name: CCS356/ OBJECT ORIENTED SOFTWARE ENGINEERING

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C309.1 | Compare various Software Development Lifecycle Models |
| C309.2 | Evaluate project management approaches as well as cost and schedule estimation strategies. |
| C309.3 | Perform formal analysis on specifications |
| C309.4 | Use UML diagrams for analysis and design. |
| C309.5 | Architect and design using architectural styles and design patterns, and test the system |

Course Code / Course Name: IT3681/ MOBILE APPLICATIONS DEVELOPMENT LABORATORY

| CO No. | Course Outcomes (COs) |
|---------------|--|
| C316.1 | Design and build simple mobile applications supporting multiple platforms. |
| C316.2 | Apply various programming techniques and patterns to build mobile applications. |
| C316.3 | Build real-time mobile applications for society/environment |
| C316.4 | Build gaming and multimedia based mobile applications |
| C316.5 | Build AI based mobile applications for society/environment following ethical practices |

Course Code / Course Name: IT3811/ PROJECT WORK/INTERNSHIP

| CO No. | Course Outcomes (COs) |
|---------------|---|
| C407.1 | Gain Domain knowledge and technical skill set required for solving industry / research problems |
| C407.2 | Provide solution architecture, module level designs, algorithms |
| C407.3 | Choose efficient tools for designing project modules. |
| C407.4 | Implement, test and deploy the solution for the target platform |
| C407.5 | Prepare detailed technical report, demonstrate and present the work |