DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOME (R-20)

IYear I semester

COMMUNICATIVE ENGLISH

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1101	understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
2	BS1101	ask and answer general questions on familiar topics and introduce oneself/others
3	BS1101	employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
4	BS1101	recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
5	BS1101	form sentences using proper grammatical structures and correct word forms

MATHEMATICS - I

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1102	utilize mean value theorems to real life problems (L3)
2	BS1102	solve the differential equations related to various engineering fields (L3)
3	BS1102	familiarize with functions of several variables which is useful in optimization (L3)
4	BS1102	apply double integration techniques in evaluating areas bounded by region (L3)
5	BS1102	students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems(L5)

APPLIED PHYSICS :

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1108	Explain the need of coherent sources and the conditions for sustained interference (L2). Identify the applications of interference in engineering (L3). Analyze the differences between interference and diffraction with applications (L4). Illustrate the concept of polarization of light and its applications (L2). Classify ordinary refracted light and extraordinary refracted rays by their states of polarization (L2
2	BS1108	Explain various types of emission of radiation (L2). Identify the role of laser in engineering applications (L3). Describe the construction and working principles of various types of lasers (L1). Explain the working principle of optical fibers (L2). Classify optical fibers based on refractive index profile and mode of propagation (L2). Identify the applications of optical fibers in medical, communication and other fields (L2). Apply the fiber optic concepts in various fields (L3)
3	BS1108	Describe the dual nature of matter (L1). Explain the significance of wave function (L2). Identify the role of Schrodinger's time independent wave equation in studying particle in onedimensional infinite potential well (L3). Identify the role of classical and quantum free electron theory in the study of electrical conductivity (L3). Classify the energy bands of solids (L2).
4	BS1108	Explain the concept of dielectric constant and polarization in dielectric materials (L2). Summarize various types of polarization of dielectrics (L2). Interpret Lorentz field and Claussius-Mosotti relation in dielectrics (L2). Classify the magnetic materials based on susceptibility and their temperature dependence (L2). Explain the applications of dielectric and magnetic materials (L2). Apply the concept of magnetism to magnetic devices (L3)
5	BS1108	Outline the properties of charge carriers in semiconductors (L2). Identify the type of semiconductor using Hall effect (L2). Identify applications of semiconductors in electronic devices (L2). Classify superconductors based on Meissner's effect (L2). Explain Meissner's effect, BCS theory & Josephson effect in superconductors (L2).

PROGRAMMING FOR PROBLEM SOLVING USING C

At the end of the course student should be able to

Sno	Course code	CO Statement

1	ES1101	To write algorithms and to draw flowcharts for solving problems
2	ES1101	To convert flowcharts/algorithms to C Programs, compile and debug programs
3	ES1101	To use different operators, data types and write programs that use two-way/ multi-way selection
4	ES1101	To select the best loop construct for a given problem
5	ES1101	To design and implement programs to analyze the different pointer applications
6	ES1101	To decompose a problem into functions and to develop modular reusable code
7	ES1101	To apply File I/O operations

ENGINEERING DRAWING :

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1103	The student will learn how to visualize 2D & 3D objects.

PROGRAMMING FOR PROBLEM SOLVING USING C LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1102	Gains Knowledge on various concepts of a C language.
2	ES1102	Able to draw flowcharts and write algorithms.
3	ES1102	Able design and development of C problem solving skills
4	ES1102	Able to design and develop modular programming skills.
5	ES1102	Able to trace and debug a program

ENGLISH COMMUNICATION SKILLS LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	HS	

APPLIED PHYSICS LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS	Gains Knowledge on various concepts of a C language. Able to draw flowcharts and write algorithms.
2	BS	Able design and development of C problem solving skills. Able to design and develop modular programming skills. Able to trace and debug a program

I Year II semester

MATHEMATICS -II

At the end of the course student should be able to

Sno	Course code	CO Statement
1	HS1201	develop the use of matrix algebra techniques that is needed by engineers for practical applications (L6)
2	HS1201	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel (L3)
3	HS1201	evaluate the approximate roots of polynomial and transcendental equations by different algorithms (L5)
4	HS1201	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
5	HS1201	apply numerical integral techniques to different Engineering problems (L3)
6	HS1201	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations (L3)

APPLIED CHEMISTRY

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1210	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
2	BS1210	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion.
3	BS1210	Synthesize nanomaterials for modern advances of engineering technology.

4	BS1210	• Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
5	BS1210	Analyze the principles of different analytical instruments and their applications.
6	BS1210	Design models for energy by different natural sources.
7	BS1210	Obtain the knowledge of computational chemistry and molecular machines

COMPUTER ORGANIZATION

At the end of the course student should be able

Sno	Course code	CO Statement
1	BS1204	Demonstrate and understanding of the design of the functional units of a digital computer system.
2	BS1204	Relate Postulates of Boolean algebra and minimize combinational functions
3	BS1204	Recognize and manipulate representations of numbers stored in digital computers
4	BS1204	Build the logic families and realization of logic gates.
5	BS1204	Design and analyze combinational and sequential circuits
6	BS1204	Recall the internal organization of computers, CPU, memory unit and Input/Outputs and the relations between its main components
7	BS1204	Solve elementary problems by assembly language programming

PYTHON PROGRAMMING

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1206	Develop essential programming skills in computer programming concepts like data types, containers
2	ES1206	Apply the basics of programming in the Python language
3	ES1206	Solve coding tasks related conditional execution, loops
4	ES1206	Solve coding tasks related to the fundamental notions and techniques used in objectoriented programming

DATA STRUCTUERS

At the end of the course student should be able to

Sno	Course code	CO Statement

1	ES1207	Summarize the properties, interfaces, and behaviors of basic abstract data types
2	ES1207	Discuss the computational efficiency of the principal algorithms for sorting & searching
3	ES1207	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
4	ES1207	Demonstrate different methods for traversing trees

APPLIED CHEMISTRY LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BS1211	The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

PYTHON PROGRAMMING LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	ES1208	Develop essential programming skills in computer programming concepts like data types, containers
2	ES1208	Apply the basics of programming in the Python language
3	ES1208	Solve coding tasks related conditional execution, loops
4	ES1280	Solve coding tasks related to the fundamental notions and techniques used in objectoriented programming

DATA STRUCTUERS LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PR1201	Use basic data structures such as arrays and linked list.
2	PR1201	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.

3	PR1201	Use various searching and sorting algorithms.

ENVIRONMENT SCIENCE

At the end of the course student should be able to

Sno	Course code	CO Statement
1		

II Year I semester

MATHEMATICS -III

At the end of the course student should be able to

Sno	Course code	CO Statement
1	BSC	Interpret the physical meaning of different operators such as gradient, curl and divergence
2	BSC	Estimate the work done against a field, circulation and flux using vector calculus (L5)
3	BSC	Apply the Laplace transform for solving differential equations (L3)
4	BSC	Find or compute the Fourier series of periodic signals (L3)
5	BSC	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
6	BSC	Identify solution methods for partial differential equations that model physical processes (L3)

OBJECT ORIENTED PROGRAMMING THROUGH C++

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PCC-ME	Classify object oriented programming and procedural programming
2	PCC-ME	Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling
3	PCC-ME	Build C++ classes using appropriate encapsulation and design principles

4	PCC-ME	Apply object oriented or non-object oriented techniques to solve bigger computing problems

OPERATING SYSTEMS

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Describe various generations of Operating System and functions of Operating System
2	PCC-ME	Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance
3	PCC-ME	Solve Inter Process Communication problems using Mathematical Equations by various methods
4	PCC-ME	Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques
5	PCC-ME	Outline File Systems in Operating System like UNIX/Linux and Windows

SOFTWARE ENGINEERING

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Ability to transform an Object-Oriented Design into high quality, executable code
2	PCC-ME	Skills to design, implement, and execute test cases at the Unit and Integration level
3	PCC-ME	Compare conventional and agile software methods

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Demonstrate skills in solving mathematical problems
2	PCC-ME	Comprehend mathematical principles and logic
3	PCC-ME	Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software
4	PCC-ME	Manipulate and analyze data numerically and/or graphically using

		appropriate Software
5	PCC-ME	Communicate effectively mathematical ideas/results verbally or in writing

OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB

At the end of the course student should be able to

S.No	Course code	CO Statement
1	PCC-ME	Apply the various OOPs concepts with the help of programs.

OPERATING SYSTEM LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PCC-Lab1	To use Unix utilities and perform basic shell control of the utilities
2	PCC-Lab1	To use the Unix file system and file access control
3	PCC-Lab1	To use of an operating system to develop software
4	pcc-lab1	Students will be able to use Linux environment efficiently
5	pcc-Lab1	Solve problems using bash for shell scripting

SOFTWARE ENGINEERING LAB

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PCC-Lab2	By the end of this lab the student is able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project
2	PCC-Lab2	prepare SRS document, design document, test cases and software configuration management and risk management related document
3	PCC-Lab2	develop function oriented and object oriented software design using tools like rational rose.
4	PCC-Lab2	use modern engineering tools necessary for software project management, estimations, time management and software reuse
5	PCC-Lab2	generate test cases for software testing

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APPLICATIONS OF PYTHON-NumPy

At the end of the course student should be able to

Sno	Course code	CO Statement
1	PROJ-2101	Explain how data is collected, managed and stored for processing
2	PROJ-2101	Understand the workings of various numerical techniques, different descriptive measures of Statistics, correlation and regression to solve the engineering problems
3	PROJ-2101	Understand how to apply some linear algebra operations to n-dimensional arrays
4	PROJ-2101	Use NumPy perform common data wrangling and computational tasks in Python.

Web Application Development Using Full Stack -Frontend Development – Module –I

At the end of the course student should be able to

Sno	Course Code	Co statement
1	so	Analyze a web page and identify its elements and attributes.
2	so	Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet
3	so	Implement MVC and responsive design to scale well across PC, tablet and Mobile phone
4	so	Create web pages using HTML and Cascading Style Sheets.

CONSTITUTION OF INDIA

At the end of the course student should be able to

sno	Course code	Co statement
1	MC	Understand historical background of the constitution making and its importance for building a democratic India.
2	MC	Understand the functioning of three wings of the government ie., executive, legislative and judiciary.
3	MC	Understand the value of the fundamental rights and duties for becoming good citizen of India.
4	MC	Analyze the decentralization of power between central, state and local selfgovernment.

II Year - II Semester

PROBABILITY AND STATISTICS

At the end of the course the student able to

S.No	Course code	CO Statement
1	BS	Classify the concepts of data science and its importance (L4) or (L2)
2	BS	Interpret the association of characteristics and through correlation and regression tools (L4)
3	BS	Make use of the concepts of probability and their applications (L3)
4	BS	Apply discrete and continuous probability distributions (L3)
5	BS	Design the components of a classical hypothesis test (L6)
6	BS	Infer the statistical inferential methods based on small and large sampling tests (L4)

DATABASE MANAGEMENT SYSTEMS

At the end of the course student should be able to

S.No	Course code	CO Statement
1	CS	Describe a relational database and object-oriented database
2	CS	Create, maintain and manipulate a relational database using SQL
3	CS	Describe ER model and normalization for database design
4	CS	Examine issues in data storage and query processing and can formulate appropriate solutions
5	CS	Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage

FORMAL LANGUAGES AND AUTOMATA THEORY

At the end of the course student should be able to

S.No	Course code	CO Statement
1	CS	Classify machines by their power to recognize languages
2	CS	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
3	CS	Employ finite state machines to solve problems in computing
4	CS	Illustrate deterministic and non-deterministic machines
5	CS	Quote the hierarchy of problems arising in the computer science

JAVA PROGRAMMING

At the end of the course student should be able

S.No	Course code	CO Statement
1	ES	Able to realize the concept of Object Oriented Programming & Java Programming Constructs
2	ES	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords
3	ES	Apply the concept of exception handling and Input/ Output operations
4	ES	Able to design the applications of Java & Java applet
5	ES	Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit

MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY

At the end of the course student should be able

S.No	Course code	CO Statement
1	HS	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product
2	HS	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
3	HS	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units
4	HS	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
5	HS	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making

DATABASE MANAGEMENT SYSTEMS LAB

At the end of the course student should be able

S.No	Course code	CO Statement
1	CS	Utilize SQL to execute queries for creating database and performing data manipulation operations
2	CS	Examine integrity constraints to build efficient databases
3	CS	Apply Queries using Advanced Concepts of SQL
4	CS	Build PL/SQL programs including stored procedures, functions, cursors and triggers

R PROGRAMMING LAB

At the end of the course student should be able

Sno	Course code	CO Statement
1	CS	Access online resources for R and import new function packages into the R workspace
2	CS	Import, review, manipulate and summarize data-sets in R
3	CS	Explore data-sets to create testable hypotheses and identify appropriate statistical tests
4	CS	Perform appropriate statistical tests using R
5	CS	Create and edit visualizations with R

JAVA PROGRAMMING LAB

At the end of the course student should be able

Sno	Course code	CO Statement
1	ES	Evaluate default value of all primitive data type, Operations, Expressions, Controlflow, Strings
2	ES	Determine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism
3	ES	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
4	ES	Construct Threads, Event Handling, implement packages, developing applets

APPLICATIONS OF PYTHON-Pandas

At the end of the course student should be able

S.No	Course code	CO Statement
1	SO	Use Pandas to create and manipulate data structures like Series and DataFrames
2	SO	Work with arrays, queries, and dataframes
3	SO	Query DataFrame structures for cleaning and processing and manipulating files
4	SO	Understand best practices for creating basic charts

Web Application Development Using Full Stack

At the end of the course student should be able

S.No	Course code	CO Statement
1	SO	develop of the major Web application tier- Client side development
2	SO	participate in the active development of cross-browser applications through JavaScript
3	SO	Develop JavaScript applications that transition between states

HOD   **PRINCIPAL**