2.6.1 Teachers and students are aware of the stated programme and course outcomes of the programs offered by the institution

S. No	Description	Page No.
1.	CO of sample department courses &PO/PSO mapping –Sample department (EEE,CSE &CSE(CS))	**2-79**

Course Name: HS3152 Professional English - I

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO	-	-	-	-	-	-	-	3	3	3	-	3	-	-

CO1	Read technical texts and write area-specific texts effortlessly
CO2	Listen and comprehend lectures and talks in their area of specialisation successfully
CO3	Speak appropriately and effectively in varied formal and informal contexts
CO4	Write reports and winning job applications.
CO5	Comprehend conversations and short talks delivered in English

Course Name: MA3151 Matrices and Calculus

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO	-	-	-	-	-	-	-	3	3	3	-	3	-	-

CO	
CO1	Solve maxima & minima problems using both the limit concept and rules of differentiation.
CO2	Solve the problems based on maxima and minima for functions of two variables using partial derivative and total derivatives
CO3	Determine integrals using Riemann sums and techniques of integration such as, substitution, partial fractions and integration by parts and determine convergence/divergence of improper integrals.
CO4	Acquire knowledge about evaluating double integrals and triple integrals and used to calculate area and volume.
CO5	Apply various techniques in solving ordinary differential equations

Course Name: PH3151 Engineering Physics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	-	2	-	-	-	2	-	2	3	3
CO2	3	-	3	-	-	-	-	-	-	2	-	2	3	-
CO3	3	2	3	3	-	-	-	-	-	2	-	2	3	2
CO4	3	3	3	3	-	2	-	-	-	2	-	2	3	3
CO5	3	3	3	3	-	2	-	-	-	2	-	2	3	3
CO	3	3	3	3	-	2	-	-	-	2	-	2	3	3

CO	
CO1	Recognize the elastic properties of different materials.
CO2	Solve problems related to engineering applications by using LASER and fibre optics techniques.
CO3	Illustrate the modern applications of thermal insulation materials.
CO4	Elaborate the dual nature of the light based on quantum theory.
CO5	Apply the knowledge gained on crystal physics, structure of the crystal and preparation of crystal in various methods.

Course Name: CY3151 Engineering Chemistry

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	CO	PO1
CO1	3	2	3	-	2	3	3	-	-	-	-	2	3	2
CO2	3	1	1	-	-	1	-	-	-	-	-	-	3	1
CO3	3	1	-	-	-	-	2	-	-	-	-	1	3	1
CO4	3	2	2	-	1	2	3	-	-	-	-	2	3	2
CO5	3	2	2	-	1	2	3	-	-	-	-	2	3	2
CO	3	2	2	-	1	2	3	-	-	-	-	2	3	2

CO	
CO1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
CO2	Critically evaluate adsorption isotherm in chemical equilibrium and chemical kinetics, including effects of pressure, temperature, catalysts.
CO3	Prediction of equilibrium relations & their characterizations to construct phase diagrams and the alloy making.
CO4	Differentiate between various fuels & analyze exhaust and flue gases.
CO5	Have the knowledge of converting solar energy in to most needy electrical energy efficiently and economically to reduce the environmental pollution & design of energy storage devices.

Course Name: GE3151 Problem Solving And Python Programming

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	-	-	1	-	-	-	-	-	1	3	1
CO2	3	2	1	-	1	1	-	-	-	-	-	1	3	1
CO3	3	2	1	-	-	1	-	-	-	-	-	1	3	1
CO4	3	2	1	-	-	1	-	-	-	-	-	1	3	1
CO5	3	2	1	1	-	1	-	-	-	-	-	1	3	1
CO	3	2	1	1	1	1	-	-	-	-	-	1	3	1

CO	
CO1	Develop algorithmic solutions to simple computational problems.
CO2	Demonstrate programs using simple Python statements and expressions.
CO3	Explain control flow and functions concept in Python for solving problems.
CO4	Use Python data structures – lists, tuples & dictionaries for representing compound data.
CO5	Develop algorithmic solutions to simple computational problems.

Course Name: GE3171 - Problem Solving And Python Programming Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	-	3	-	-	3	3	3	-	3	3	1
CO2	3	3	3	-	3	-	-	3	3	3	-	2	3	1
CO3	3	3	3	-	3	-	-	3	3	3	-	3	3	1
CO4	3	3	3	-	3	-	-	3	3	3	-	3	3	1
CO5	3	3	3	-	3	-	-	3	3	3	-	3	3	1
CO	3	3	3	-	3	-	-	3	3	3	-	3	3	1

CO	
CO1	Write, test, and debug simple Python programs.
CO2	Implement Python programs with conditionals and loops.
CO3	Develop Python programs step-wise by defining functions and calling them.
CO4	Use Python lists, tuples, dictionaries for representing compound data.
CO5	Read and write data from/to files in Python.

Course name: BS3171 -Physics and Chemistry Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	2	1	1	-	-	-	-	1	-	-
CO2	3	3	2	-	-	-	-	-	-	-	-	-	-	-
CO3	3	3	2	2	2	1	1	-	-	-	-	1	-	-
CO4	3	3	2	2	-	1	1	-	-	-	-	1	-	-
CO5	3	3	2	2	2	1	1	-	-	-	-	1	-	-
CO	3	3	2	2	2	1	1	-	-	-	-	1	-	-

CO	
CO1	Determine the velocity and compressibility of ultrasonic wave using different medium.
CO2	Find the young's modulus with different methods and rigidity modulus
CO3	Find thermal conductivity of bad conductor and energy band of semiconductor.
CO4	Understand the different types of hardness & alkalinities. Water quality criteria and standards of DO and Chloride.
CO5	Analyze and understand the different types of electrodes and their usage in conductivity and in pH titrations.

Course Name: HS3252 Professional English – II

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO2	-	-	-	-	-	-	-	3	3	3	1	3	-	-
CO3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO5	-	-	-	-	-	-	-	3	3	3	-	3	-	1
CO	-	-	-	-	-	-	-	3	3	3	-	3	-	1

CO	
CO1	Read technical texts and write area-specific texts effortlessly.
CO2	Listen and comprehend lectures and talks in their area of specialisation successfully.
CO3	Speak appropriately and effectively in varied formal and informal contexts.
CO4	Write reports and winning job applications.
CO5	Comprehend conversations and short talks delivered in English.

Course Name:MA3251- Statistics and Numerical Methods

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	2	-	-	-	-	3	-	-	2	2	-
CO2	2	3	2	3	-	-	-	-	2	-	-	1	1	-
CO3	2	2	3	2	-	-	-	-	3	-	-	1	-	-
CO4	2	2	1	2	-	-	-	-	2	-	-	1	-	-
CO5	2	3	2	2	1	-	-	-	2	-	1	2	-	-
CO	2	3	2	2	1	-	-	-	2	-	1	2	-	-

CO1	Describe the concept of change quadratic form to canonical form and used in various fields of engineering.
CO2	Describe the fundamentals in vector calculus and solve the problems related to multiple integrals.
CO3	Solve the problems of conformal mapping and bilinear transformations related to engineering.
CO4	Use the knowledge of complex integration with different techniques finding the integrals.
CO5	Apply Laplace transforms techniques to solve ordinary differential equations.

Course Name: PH3202 -Physics for Electrical Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	-	2	-	-	-	2	-	2	-	-
CO2	3	-	3	-	-	-	-	-	-	2	-	2	-	-
CO3	3	2	3	3	-	-	-	-	-	2	-	2	-	-
CO4	3	3	3	3	-	2	-	-	-	2	-	2	-	-
CO5	3	3	3	3	-	2	-	-	-	2	-	2	-	-
CO	3	3	3	2	-	2	-	-	-	2	-	2	-	-

CO1	Discuss the concepts of classical, quantum free electron theory and calculate the carrier concentration in metals.
CO2	Explain the basic of physics related to properties of semiconductor and its types to solve practical problems related to semiconductor materials used for engineering applications.
CO3	Illustrate the magnetic material, optical data storage devices and its engineering applications.
CO4	Solve the problems related to engineering applications by LED.
CO5	Develop the basic concepts of carbon nanotubes and its applications.

Course Name:BE3255 Basic Civil And Mechanical Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	-	3	-	-	-	-	-	2	-	-
CO2	3	3	2	-	-	3	-	-	3	2	-	3	-	-
CO3	3	-	-	-	2	3	3	-	3	-	-	3	-	-
CO4	3	3	-	-	2	2	-	-	2	-	-	3	-	-
CO5	3	2	-	-	-	2	2	-	-	-	-	3	-	-
CO	3	2	-	-	-	2	2	-	-	-	-	3	-	-

CO1	Discuss the scope and importance of civil and Mechanical engineering.
CO2	Explain the principles of surveying and importance of civil engineering materials.
CO3	Describe the components of superstructures, substructures, railway and highway.
CO4	Explain the working principle and significance of various types of power plants, pumps, Turbine and IC engines.
CO5	Describe the various terminologies of refrigeration, air-conditioning and its working principle.

Course Name: GE3251 Engineering Graphics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	2	-	-	-	2	-	-	3	-	-
CO2	3	3	3	3	2	-	-	-	2	-	-	2	-	-
CO3	3	2	3	3	3	-	-	-	2	-	-	2	-	-
CO4	3	3	3	2	3	-	-	-	2	-	-	2	-	-
CO5	3	2	3	2	3	-	-	-	2	-	-	2	-	-
CO	3	2	3	2	3	-	-	-	2	-	-	2	-	-

CO1	Perform freehand sketching of basic geometrical constructions and multiple views of objects and plane curves.
CO2	Project orthographic projections of lines and plane surfaces.
CO3	Draw projections of solids for different position.
CO4	Draw projections of section of solids and development of surfaces.
CO5	Visualize and to project isometric and perspective sections of simple solids.

Course Name: EE3251 - Electric Circuit Analysis

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	1	-	-	-	1	-	-	2	3	3
CO2	3	3	3	3	1	-	-	-	1	-	-	2	3	3
CO3	3	3	3	3	2	-	-	-	1	-	-	2	3	3
CO4	3	3	3	3	1	-	-	-	1	-	-	2	3	3
CO5	3	3	3	3	1	-	-	-	1	-	-	2	3	3
CO	3	3	3	3	1	-	-	-	1	-	-	2	3	3

CO1	Apply the knowledge of Kirchhoff's laws to determine the electrical parameters of networks.
CO2	Apply the principles of network theorem's to solve the complex electric circuits
CO3	Analysis the transient response of first order and second order system using Laplace transform.
CO4	Analyse the effect of balanced, unbalanced loads on three phase circuits.
CO5	Analyze the frequency response of resonant circuits and determine the effect of mutual inductance on coupled and tuned circuits.

Course Name : GE3271 Engineering Practices Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	3	3	-	-	-	-	2	1	1
CO2	1	-	-	-	-	3	3	-	-	-	-	2	1	1
CO3	1	-	-	-	-	3	3	-	-	-	1	1	1	1
CO4	2	-	-	-	-	3	3	-	-	-	-	1	1	1
CO5	2	-	-	-	-	3	3	-	-	-	-	1	1	1
CO	2	-	-	-	-	3	3	-	-	-	-	1	1	1

CO1	Demonstrate understanding of the complex interactions of humans and ecological systems in the natural world.
CO2	Characterize and analyze the pollution and its effects
CO3	A greater knowledge of how natural resources relate to the economy and environment, both currently and in the future
CO4	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.
CO5	To understand the basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology

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Course Name: EE3271 - Electric Circuits Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3	3	-	-	-	-	2	1	-	1	3	3
CO2	3	3	3	3	1	-	-	-	2	1	-	1	3	3
CO3	3	3	3	3	1	-	-	-	2	1	-	1	3	3
CO4	3	3	3	3	1	-	-	-	2	1	-	1	3	3
CO5	3	2	2	2	1	-	-	-	2	1	-	1	3	3
CO	3	2	2	2	1	-	-	-	2	1	-	1	3	-

CO1	Able to have a basic knowledge in the analysis of Electric Networks
CO2	Solve the given circuit with various theorems and methods.
CO3	Analyse the various three phase circuits star and delta connections.
CO4	Determine the AC & DC transients for various R,L & C circuits
CO5	Illustrate the relation between various two port parameters and transform the

Course Name: EE3301 Electromagnetic Fields

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	1	-	-	-	-	-	-	1	-	1	-	-
CO2	1	-	1	-	-	-	-	-	1	1	-	1	1	-
CO3	3	3	3	2	-	-	-	-	1	1	-	1	1	-
CO4	3	3	3	2	-	-	-	-	1	1	-	1	1	-
CO5	3	3	3	3	3	-	-	-	-	1	-	1	-	-
CO	3	3	3	3	3	-	-	-	1	1	-	1	1	-

CO1	Explain the vectors in different co-ordinate systems and transformation between the co-ordinate systems, Coulomb's law and Gauss's law and its applications.
CO2	Discuss the various aspects of electrostatics, boundary conditions and Energy density in Electro static field.
CO3	Determine the Electric field Intensity due to straight conductors, circular loop, and infinitesheet of current by applying BiotSavart's and Ampere's circuital law and discuss the boundary conditions, magnetic dipole and torque involved in it.
CO4	Apply the Maxwell equations to explain the effect of Electromagnetic fields.
CO5	Analyze the wave propagation in various dielectrics and discuss the poynting theorem.

Course Name: EE3302 DIGITAL LOGIC CIRCUITS

CO	Course Outcome
CO1	Explain the various number system, binary codes & logic families and determine the error using parity and hamming code.
CO2	Simplify and Implement Boolean functions, combinational circuits like adder, subtractor, code converters, etc., using the properties of Boolean algebra and K-map.
CO3	Analyze and design the various synchronous sequential circuits like counter, shift registers using various Flip Flops.
CO4	Design various asynchronous sequential circuits and programmable logic device.
CO5	Simulate digital logic circuit using VHDL for various applications.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3	1	2	1	-	1	2	1	1	1	-	3
CO2	3	2	3	1	2	1	-	1	2	1	1	1	-	3
CO3	3	2	3	1	2	1	-	1	2	1	1	1	-	3
CO4	3	2	3	1	2	1	-	1	2	1	1	1	-	3
CO5	3	2	3	1	2	1	-	1	2	1	1	1	-	3
CO	3	2	3	1	2	1	-	1	2	1	1	1	-	3

Course Name: EC3301 Electron Devices And Circuits

CO	Course Outcome
CO1	Acquire knowledge about semiconductor physics and analyze the rectifier and regulator circuits.
CO2	Analyze the various types of transistor and thyristor operation, construction & characteristics.
CO3	Analyze & determine the h-parameter model & operation of transistor at low and high frequencies for various transistor amplifiers
CO4	Discuss the effects of various factors that affect the trend of the frequency response of transistor amplifier; Analyze multistage amplifier and differential amplifier.
CO5	Describe the effects of feedback on amplifier parameters& explain the basic principle of operation & design of oscillators.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	1	1	-	-	3	1	-	-	1	2
CO2	3	3	3	3	1	1	-	-	3	1	-	-	1	2

CO3	3	3	3	3	1	-	-	-	3	1	-	1	-	2
CO4	3	3	3	3	1	-	-	-	3	1	-	1	-	2
CO5	3	3	2	2	1	-	-	-	3	1	-	1	-	2
CO	3	3	3	3	1	-	-	-	3	1	-	1	-	2

Course Name: EE3303 Electrical Machines – I

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	1	-	-	2	1	-
CO2	3	3	3	3	1	-	-	-	1	-	-	2	2	-
CO3	1	-	-	-	-	-	-	-	1	-	-	2	3	-
CO4	3	3	3	3	1	-	-	-	1	-	-	2	3	-
CO5	2	2	2	2	1	-	-	-	1	-	-	2	3	-
CO	3	3	3	3	1	-	-	-	1	-	-	2	3	-

CO	
CO1	Apply and analyze the magnetic material properties to various magnetic circuits
CO2	Analyze the principle of electromechanical energy conversion and concepts in rotating machines
CO3	Describe the construction, operating principles and characteristics of a DC generator
CO4	Compute the performance indices of a transformer by conducting various tests on the static machine
CO5	Elaborate the operating principles, characteristics, testing and hence determine the performance indices of a DC motor

Course Name: CS3354 Data Structures and OOPS

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	2	-	-	-	-	-	-	-	-	-	-	2
CO2	3	3	3	-	2	-	2	-	-	-	2	2	-	2
CO3	3	2	3	-	2	-	2	-	-	-	3	3	-	2
CO4	3	2	2	-	-	-	-	-	-	-	-	1	-	2
CO5	3	3	3	-	3	-	2	-	-	-	3	3	-	2
CO	3	2	3	2	2	-	-	1	2	-	1	2	-	2

CO	Course Outcome
CO1	To understand Object Oriented Programming concepts.

CO2	Ability to develop applications using Object Oriented Programming Concepts and Ability to implement features of object oriented programming to solve real world problems.
CO3	Able to develop computer programs using the advanced concepts of Virtual concept and exception handling
CO4	To know the basic characteristics of Java and to become familiar with the relationship between classes and objects in a Java program
CO5	To acquire the knowledge of various multithreading and exceptions handling in java.

Course Name: EC3311 Electronics Devices and Circuits laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	1	3	-	-	-	-	3	2	3	-	2	-
CO2	3	2	1	2	-	-	-	-	3	2	3	-	2	-
CO3	3	3	1	3	-	-	-	-	3	2	3	-	2	-
CO4	3	3	1	3	-	3	-	-	3	2	3	-	2	-
CO5	3	3	1	3	-	-	-	-	3	2	3	-	2	-
CO	3	3	1	3	-	3	-	-	3	2	3	-	2	-

CO1	Design and implement the circuits using diodes
CO2	Design and implement the circuit using the different types of transistor configurations.
CO3	Design an amplifier circuit with biasing technique.
CO4	Design and simulate a clipper and clamper circuits using spice
CO5	Design the multivibrators and oscillator circuits

Course Name: EE3311 Electrical Machines Laboratory – 1

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	-	2	2	-	-	-	1	-	-	-	3	1
CO2	2	1	-	2	2	-	-	-	1	-	-	-	3	1
CO3	3	2	-	2	2	-	-	-	1	-	-	-	3	1
CO4	3	2	2	2	2	-	-	-	1	-	-	-	3	1
CO5	3	2	2	2	2	-	-	-	1	-	-	-	3	1
CO	3	2	2	2	2	-	-	-	1	1	1	1	3	1

CO	
CO1	Conduct load test and study the performance of DC motors.
CO2	Employ and discuss the various methods of starting and speed control for DC motor
CO3	Examine the internal and external characteristics of different types of DC generators
CO4	Predict the equivalent circuit and compute the performance, losses for the given transformer
CO5	Test the given machine/ transformer and compute the performance indices

Course Name: CS3363 Data Structures and OOPS Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	1	-	-	-	-	-	2	-	1	-	-	2
CO2	3	2	2	-	-	-	-	-	2	-	1	2	-	2
CO3	3	3	2	1	1	-	-	-	3	-	2	3	-	2
CO4	3	3	3	2	2	-	2	1	3	-	3	3	-	2
CO5	3	3	3	2	2	-	2	2	3	-	3	3	-	2
CO	3	3	3	2	2	-	2	2	3	-	2	3	-	2

CO	
CO1	Able to trace the execution of program code to debug an application
CO2	Able to design object oriented solutions for small systems involving multiple objects.
CO3	Develop JAVA code using Object Oriented concepts.
CO4	Ability to write the C++, JAVA code for given problems
CO5	Ability to read, understand and control the execution of branching and looping structure in C++ programming

Course Name: GE3361 Professional Development

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	-	-	3	3	2	1	—	—
CO2	-	-	-	-	-	-	-	-	3	3	2	—	—	—
CO3	-	-	-	-	-	-	-	-	3	3	2	1	1	1
CO4	-	-	-	-	-	-	-	-	3	3	2	1	—	—
CO5	-	-	-	-	-	-	-	-	3	3	2	1	—	1
CO	-	-	-	-	-	-	-	-	3	3	2	1	1	1

CO1	Speak with confidence improving their speaking ability in one or more situations and become eloquent in the essential areas of communication such as pronunciation, fluency, or complexity.

CO	Course Outcome
CO2	Comprehend English talks or lectures actively and attentively and enhance their listening tendency.
CO3	Read and learn grammatical structures, new lexical items and the elements of pronunciation.
CO4	Develop their skills in interpersonal communication and in expressing their views in a lucid manner.
CO5	Speak with confidence improving their speaking ability in one or more situations and become eloquent in the essential areas of communication such as pronunciation, fluency, or complexity.

Course Name: EE3401 Transmission and Distribution

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	-	-	-	-	1	2	-
CO2	3	3	3	3	-	-	-	-	1	-	-	2	2	-
CO3	3	3	3	3	-	-	1	-	1	-	-	2	2	-
CO4	2	2	2	2	-	-	1	-	1	-	-	2	2	-
CO5	3	3	3	3	-	-	1	-	1	-	-	2	2	-
CO	3	3	3	3	-	-	1	-	1	-	-	2	2	-

CO	
CO1	Explain structure of power system, various types of distributors and types of transmission systems
CO2	Realize the concept of bundle conductors (GMD &GMR) and calculate the transmission line parameters (Inductance and Capacitance)
CO3	Analyze and determine performance of the transmission lines (Nominal T & π method)
CO4	Describe the types of insulator and underground cables, and hence determine string efficiency and Grading of cables.
CO5	Calculate sag under various conditions and explain the various substation and grounding systems

Course Name: EE8451-Linear Integrated Circuits

CO	Course Outcome
CO1	Define the methods of Fabrication and also describe the various components of IC fabrication
CO2	Explain the construction and characteristics of operational amplifier and design its basic applications like inverting and non-inverting amplifiers
CO3	Describe the various applications of op-amp like log and antilog amplifier, Active filters, Wave form generators, D/A and A/D converters using op-amps.
CO4	Analyze the characteristics and applications of IC 555 timer, IC566 VCO and IC565 PLL.
CO5	Illustrate the construction of various voltage regulators, audio and power amplifier ICs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	-	-	-	-	-	2	-
CO2	2	2	2	-	-	-	-	-	-	-	-	-	2	-
CO3	2	2	2	-	-	-	-	-	-	-	-	-	2	-
CO4	3	2	3	-	2	-	-	-	-	-	-	-	2	-
CO5	2	1	1	-	2	-	-	-	-	-	-	-	2	-
CO	2	2	2	-	2	-	-	-	-	-	-	-	2	-

Course Name: EE3403 Measurements and Instrumentation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	1	2	2	2	-	-	-	-	-	-	-	1	2	-
CO3	3	2	-	2	-	-	-	-	-	-	-	-	-	-
CO4	2	-	2	-	-	-	-	-	-	-	-	1	2	-
CO5	1	-	1	1	-	-	-	-	-	-	-	1	2	-
CO	2	2	2	2	-	-	-	-	-	-	-	1	2	-

CO	Description
CO1	Explain the functional elements, characteristics and errors in measurements thereby understanding the standards.
CO2	Describe the construction and operation of various electrical and electronics instruments and determine the magnetic measurements
CO3	Determine the basic values of R,L & C through comparison methods and effect of interference
CO4	Illustrate the construction and operation of various storage and display devices.
CO5	Explain and select various transducers and data acquisition system used for various applications

Course Name: EE3404 Microprocessors and Microcontrollers

CO	Description
CO1	Illustrate the signals, architecture and IO ports of microprocessors (8085).
CO2	Write assembly language programs for microprocessor (8085).
CO3	Describe various peripheral devices and their interfaces for 8085 & 8051
CO4	Explain the architecture, data transfer concepts, and interrupt of the microcontroller (8051).
CO5	Describe the architectural aspects and basics of PIC microcontroller

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	-	-	-	-	2	-	3
CO2	2	2	2	2	2	-	-	1	2	-	2	2	3	3
CO3	1	-	1	-	-	-	-	-	-	-	-	2	-	3
CO4	2	-	2	-	2	-	-	-	-	-	2	2	3	3
CO5	2	2	2	2	3	-	-	-	-	-	2	2	3	3
CO	2	2	2	2	3	-	-	1	2	-	2	2	3	3

Course Name: EE3405 & ELECTRICAL MACHINES II

CO	Course Outcome
CO1	Describe the Construction and performance of salient and non – salient type synchronous generators.
CO2	Illustrate the Principle of operation and performance of synchronous motor.
CO3	Outline the Construction, principle of operation and performance of various induction machines.
CO4	Discuss the types of Starters, and speed control methods for three-phase induction motors.
CO5	Explain the Construction, principle of operation and performance of single phase induction motors and special machines.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	2		1		1			1	3	-
CO2	2	2	2	2	2		1		1			1	3	-
CO3	2	2	2	2	2		1		1			1	3	-
CO4	2	2	2	2	2		1		1			1	3	-
CO5	2	2	2	2	2		1		1		-	-	3	-
CO5	2	2	2	2	2	-	1	.	1	.		1	3	-

Course Name: EE8411– Electrical Machines Laboratory-II

CO	Course Outcome
CO 1	Analyze and predetermine the regulation of Alternators using various methods.
CO 2	Examine the effect of various sequence parameters on d-q reactance.

CO		
CO 3		Experiment and determine the characteristics of synchronous machine with varying excitation.
CO 4		Compute the performance of single and three phase induction motor and determine the suitability of various starters.
CO 5		Inspect and interpret the equivalent circuit parameters for induction motor.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	2	-	-	-	1	1	1	1	2	-
CO2	2	2	-	2	2	-	-	-	1	1	1	1	1	-
CO3	3	3	2	2	2	-	-	-	1	1	1	1	2	-
CO4	3	3	2	2	2	-	-	-	1	1	1	1	2	-
CO5	2	2	-	2	2	-	-	-	1	1	1	1	2	-
CO	3	2	2	2	2	-	-	-	1	1	1	1	2	-

Course Name: EE3412– Linear and Digital Circuits Laboratory

CO	Course Outcome
CO 1	Working Practice in simulators to learn design, testing and characterizing of circuit behavior with digital and analog ICs.
CO 2	Design combinational logic circuits using digital IC's.
CO 3	Analyze and design various applications of Op-Amp
CO 4	Design and construct waveform generation circuits using timer
CO 5	Design and explain the analog to digital conversion and vice versa using op amps.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	-	-	-	-	-	1	1	2	2	-
CO2	3	2	2	2	3	-	-	-	-	1	1	2	2	-
CO3	3	2	2	2	3	-	-	-	-	1	1	2	2	-
CO4	3	2	2	2	3	-	-	-	-	1	1	2	2	-
CO5	3	2	2	2	3	-	-	-	-	1	1	2	2	-
CO	3	2	2	2	2	-	-	-	-	1	1	2	2	-

Course Name: EE3413 Microprocessors and Microcontrollers Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3	2	2	-	-	-	1	1	1	2	-	3
CO2	3	2	3	2	1	-	-	-	1	1	1	2	-	3
CO3	2	2	1	1	2	-	-	-	1	1	1	2	2	3
CO4	3	2	3	3	1	-	-	-	1	1	1	2	2	3
CO5	1	1	1	1	2	-	-	-	1	1	1	2	2	3
CO	3	2	2	2	2	-	-	-	1	1	1	1	2	3

CO	
CO1	Build the logic for Data manipulation of programs on the 8085 microprocessor and 8051 microcontroller
CO2	Develop the assembly level programming to illustrate control instructions in the 8085 microprocessor and 8051 microcontroller
CO3	Work with standard interfaces like 8255, 8253, digital-to-analog Converters and analog-to-digital converters etc with Microprocessor (8085) and Microcontroller (8051)
CO4	Design logical real-time applications like Traffic Light Control, Motor Interface, etc, using 8085 microprocessor and 8051 microcontroller
CO5	Practices with Simulators / Emulators / open source for assembly level programming

Course Name: EE3501 POWER SYSTEM ANALYSIS

CO	Course Outcome
CO 1	Ability to model the power system under steady state operating condition.
CO 2	Ability to carry out power flow analysis using.
CO 3	Ability to infer the significance of short circuit studies in designing circuit breaker.
CO 4	Ability to analyze the state of the power system for various unsymmetrical faults.
CO 5	Ability to analyze the stability of power system using different methods.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	1	-	-	-	-	1	1	-	-	1	-
CO2	3	3	3	2	-	-	-	-	1	1	-	-	1	1
CO3	3	3	3	2	-	-	-	-	1	1	-	1	1	1
CO4	3	2	2	2	2	-	-	-	1	1	-	1	1	1
CO5	3	3	2	2	2	-	-	-	1	1	-	1	1	1

CO	3	2.6	2.4	1.8	1.4	-	-	-	1	1	-	1	1	1	1

Course Name: EE3591 Power Electronics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	1	-	-	-	-	2	3	-
CO2	3	2	2	1	2	-	1	-	-	-	-	2	3	-
CO3	3	2	2	1	2	-	1	-	-	-	-	2	3	-
CO4	2	-	-	-	2	-	1	-	-	-	-	2	3	-
CO5	2	-	-	-	2	-	1	-	-	-	-	2	3	-
CO	3	2	2	1	2	-	1	-	-	-	-	2	3	-

CO1	Explain the construction and operation of semiconductor devices and their switching characteristics.
CO2	Determine the various performance indices of controlled rectifiers .
CO3	Analysis and design the various DC-DC converters
CO4	Describe the inverter topology and Pulse Width modulation techniques.
CO5	Illustrate the principle behind AC-AC converters and its applications.

EE3503 – Control Systems

COs	Course Outcome
CO1	Determine the transfer function of the electrical, mechanical, thermal system by using block diagram reduction, signal flow graph techniques and acquire the equivalent electrical analogous circuit.
CO2	Analyze the stability through time response specifications, routh array, root locus by considering the effect of adding poles and zeros.
CO3	Analyze the behavior of open loop, closed loop system using frequency domain specifications through bode plot, polar plot and Nyquist plot.
CO4	Design the state models for linear, time invariant systems to test the controllability and observability.
CO5	Design suitable lag, lead, lag-lead, lag-lead compensators and PID Controllers to achieve specifications for stability

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Course Name: EE3511 Power Electronics and Drives Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	-	2	-	-	-	-	-	-	1	2	3	-
CO2	3	3	2	2	-	-	-	-	-	-	1	2	3	2
CO3	2	2	2	2	2	-	-	-	-	-	1	2	3	-
CO4	2	2	2	2	2	-	-	-	-	-	1	2	3	2
CO5	3	3	2	2	3	-	-	-	-	-	2	2	3	2
CO	3	3	2	2	3	-	-	-	-	-	2	2	3	2

CO1	Sketch the characteristics of power electronic devices and its triggering sequence using passive elements.
CO2	Analyze the performance of half/Fully controlled rectifiers for different types of load
CO3	Interpret the various control strategies to computethePerformanceindices of DC-DC converters.
CO4	Illustrate the operating principle behind AC-AC/DC converters for speed control of the motor by incorporating different modulation techniques.
CO5	Simulate and analyze the various power electronic converters

EE3512 – Control and Instrumentation Laboratory

COs	Course Outcome
CO1	Analyze the simple analog and digital physical systems by modeling and simulation.
CO2	Implement the simple controllers in standard forms.
CO3	Design compensators based on time and frequency domain specifications.
CO4	Design the complete closed control loop by evaluating its performance for simple physical systems.
CO5	Analyze the stability of a physical system in both continuous and discrete domains

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	-	-	1	-	1	-	3	3	3
CO2	3	3	3	3	2	-	-	1	-	1	-	3	3	3

CO												
CO3	3	3	3	2	-	1	-	-	1	-	3	3	3
CO4	3	3	3	2	-	1	-	-	1	-	3	3	3
CO5	3	3	3	2	-	1	-	-	1	-	3	3	3
CO	3	3	3	2	-	1	-	-	1	-	3	3	3

Course Name: EE3601 Protection and Switchgear

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	2	2	-	2	-	-	-	-	1	2	-
CO2	2	2	2	-	2	-	2	-	-	-	-	1	2	-
CO3	2	2	2	2	-	-	2	-	-	-	-	1	2	-
CO4	2	-	2	2	2	-	2	-	-	-	-	1	2	-
CO5	2	2	-	2	-	-	2	-	-	-	-	1	2	-
CO	2	2	2	2	2	-	2	1	-	-	-	1	2	-

CO1	Explain the concept of fault due to lightning and the various protective schemes involved in protection like earthing, insulation and fault current reduction.
CO2	Describe the construction and operation of various types of relays and their applications of relays used in grids and power stations etc.
CO3	Illustrate the construction of CTs, PTs and various protective devices involved in protecting transformers, transmission lines, generators, busbars and various apparatus
CO4	Correlate the relation between static relay and numerical protection
CO5	Demonstrate the operation, implementation, types, and testing of circuit breakers which are used in substations and homes

Course Name: EE3602 Power System Operation and Control

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	1	-	-	-	-	-	-	1	-	-
CO2	1	1	1	1	1	-	-	-	-	-	-	1	2	-
CO3	1	-	-	-	-	-	-	-	-	-	-	1	2	-
CO4	3	2	2	2	1	-	1	-	-	-	-	1	-	-

| CO5 | 2 | - | - | 2 | 2 | 1 | - | - | - | - | - | - | - | - | 2 |
| CO | 2 | 2 | 2 | 2 | 2 | 1 | - | - | - | - | - | 1 | - | 1 | 2 |

CO	Course Outcome
CO1	Understand the need for power system operation and control.
CO2	Get knowledge of the mechanism involved in maintaining the frequency constant by controlling the real power, when there is a system load variation.
CO3	Understand voltage constancy and the methods of voltage control.
CO4	Analyze the economic scheduling of load among the generators and the concept of economic dispatch
CO5	Understand the methods of computer control using energy control centre and SCADA.

Course Name: EE3611 power system laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	3	-	-	-	1	1	1	1	2	3
CO2	2	2	2	2	3	-	-	-	1	1	1	1	-	3
CO3	2	2	2	2	3	-	-	-	1	1	1	1	2	3
CO4	3	2	2	2	3	-	-	-	1	1	1	1	-	3
CO5	3	2	2	2	3	-	-	-	1	1	1	1	-	3
CO	3	2	2	2	3	-	-	-	1	1	1	1	2	3

CO	Course Outcome
CO1	Ability to understand power system planning and operational studies.
CO2	Ability to Formation of Bus Admittance, Impedance Matrices and Solution of Networks.
CO3	Ability to analyze the power flow using GS and NR method
CO4	Ability to find Symmetric and Unsymmetrical fault.
CO5	Ability to understand the economic dispatch.

Course NameEE3701 High Voltage Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	2	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	2	-	-	-	-	-	-	-
CO3	-	1	-	-	-	-	2	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	2	-	-	-	-	-	-	-
CO5	-	1	-	-	-	-	2	-	-	-	-	-	-	-
CO	2	1	-	-	-	-	2	-	-	-	-	-	-	-

CO1	Comprehend the causes of over voltages and protection of over voltages in power system
CO2	Illustrate the mechanism of electrical breakdown in gases, solids and liquids
CO3	Discuss the various techniques involved in generation of high voltage and high current.
CO4	Describe the different types of high voltage and high current measurement techniques
CO5	Explain the methods used for testing of electrical equipments and insulation coordination.

Course Name: EE3811 Project Work

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CO2	3	3	3	3	3	3	2	2	2	3	3	3	3	3
CO3	3	3	3	3	3	3	2	2	2	3	3	3	3	3
CO4	3	3	3	3	3	3	2	2	2	3	3	3	3	3
CO5	3	3	3	3	3	3	2	2	2	3	3	3	2	2
CO1	3	3	3	3	3	3	2	2	2	3	3	3	3	3

CO1	Discuss and infer the technical details through literature survey.
CO2	Apply the acquired knowledge and identify the methodology
CO3	Examine the technological gap for product design.
CO4	Demonstrate the product design and development
CO5	Elucidate the relationship of environmental and ethical issues with technical development

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	3	-	-	1	-	-	-	3	3	3
CO2	3	3	3	3	3	-	-	1	-	-	-	3	3	3
CO3	3	3	3	3	3	-	-	1	-	-	-	3	3	3
CO4	3	3	3	3	3	-	-	1	-	-	-	3	3	3
CO5	3	3	3	3	3	-	-	1	-	-	-	3	3	3
CO	3	3	3	3	3	-	-	1	-	-	-	3	3	3

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
CO-PO AND CO-PSO MAPPING
REGULATION – 2021

Course Name: HS3152 PROFESSIONAL ENGLISH I - C101

HS3152 PROFESSIONAL ENGLISH I - C101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	1	1	1	1	1	3	3	3	1	3	-	3	-	-
C101.2	1	1	1	1	1	3	3	3	1	3	-	3	-	-
C101.3	2	3	2	3	2	3	3	3	2	3	3	3	-	-
C101.4	2	3	2	3	2	3	3	3	2	3	3	3	-	-
C101.5	2	3	3	3	-	3	3	3	2	3	-	3	-	-
C101	1.6	2.2	1.8	2.2	1.5	3	3	3	1.6	3	3	3	-	-

COURSE NAME: HS3152 - Professional English – I	
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

Course Name: MA3151 MATRICES AND CALCULUS C102

MA3151 MATRICES AND CALCULUS C102	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.2	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.3	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.4	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.5	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102	3	3	1	1	0	0	0	0	2	0	2	3	-	-

COURSE NAME: MA3151- Matrices and Calculus	
C102.1	Use the matrix algebra methods for solving practical problems
C102.2	Apply differential calculus tools in solving various application problems
C102.3	Able to use differential calculus ideas on several variable functions
C102.4	Apply different methods of integration in solving practical problems
C102.5	Apply multiple integral ideas in solving areas, volumes and other practical problems

Course Name: PH3151 ENGINEERING PHYSICS - C103

PH3151 ENGINEERING PHYSICS - C103

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	3	2	1	1	1	-	-	-	-	-	-	-	-
C103.2	3	3	2	1	2	1	-	-	-	-	-	-	-	-
C103.3	3	3	2	2	2	1	-	-	-	-	-	1	-	-
C103.4	3	3	1	1	2	1	-	-	-	-	-	-	-	-
C103.5	3	3	1	1	2	1	-	-	-	-	-	-	-	-
C103	3	3	1.6	1.2	1.8	1	-	-	-	-	-	1	-	-

COURSE NAME: PH3151- Engineering Physics	
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 Name: CY3151 ENGINEERING CHEMISTRY - C104

CY3151 ENGINEERING CHEMISTRY - C104

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	2	2	1	-	1	1	-	-	-	-	1	-	-
C104.2	2	-	-	1	-	2	2	-	-	-	-	-	-	-
C104.3	3	1	-	-	-	-	-	-	-	-	-	-	-	-
C104.4	3	1	1	-	-	1	2	-	-	-	-	-	-	-
C104.5	3	1	2	1	-	2	2	-	-	-	-	2	-	-
C104	2.8	1.3	1.6	1	-	1.5	1.8	-		-	-	1.5	-	-

COURSE NAME: CY3151- Engineering Chemistry	
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 nanoscience and nanotechnology in designing the synthesis of nanomaterials 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 Name: GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING - C105

GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING - C105

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	3	3	3	2	-	-	-	-	-	2	2	3	3
C105.2	3	3	3	3	2	-	-	-	-	-	2	2	3	-
C105.3	3	3	3	3	2	-	-	-	-	-	2	-	3	-
C105.4	2	2	-	2	2	-	-	-	-	-	1	-	3	-
C105.5	1	2	-	-	1	-	-	-	-	-	1	-	2	-
C105.6	2	2	-	-	2	-	-	-	-	-	1	-	2	-
C105	2	3	3	3	2	-	-	-	-	-	2	2	3	3

COURSE NAME: GE3151- Problem Solving and Python Programming	
C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Develop and execute simple Python programs
C105.3	Write simple Python programs using conditionals and loops for solving problems
C105.4	Decompose a Python program into functions
C105.5	Represent compound data using Python lists, tuples, dictionaries etc.
C105.6	Read and write data from/to files in Python programs.

Course Name: GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY - C106

GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY - C106

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	3	3	3	2	-	-	-	-	-	2	2	3	3
C106.2	3	3	3	3	2	-	-	-	-	-	2	2	3	-
C106.3	3	3	3	3	2	-	-	-	-	-	2	-	3	-
C106.4	2	2	-	2	2	-	-	-	-	-	1	-	3	-
C106.5	1	2	-	-	1	-	-	-	-	-	1	-	2	-
C106.6	2	2	-	-	2	-	-	-	-	-	1	-	2	-
C106	2	3	3	3	2	-	-	-	-	-	2	2	3	3

COURSE NAME: GE3171 - Problem Solving and Python Programming Laboratory	
C106.1	Develop algorithmic solutions to simple computational problems
C106.2	Develop and execute simple Python programs
C106.3	Implement programs in Python using conditionals and loops for solving problems
C106.4	Deploy functions to decompose a Python program
C106.5	Process compound data using Python data structures
C106.6	Utilize Python packages in developing software applications

Course Name: BS3171 PHYSICS AND CHEMISTRY LABORATORY- C107

BS3171 PHYSICS AND CHEMISTRY LABORATORY- C107

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	2	3	1	1	-	-	-	-	-	-	-	-	-
C107.2	3	3	2	1	1	-	-	-	-	-	-	-	-	-
C107.3	3	2	3	1	1	-	-	-	-	-	-	-	-	-
C107.4	3	3	2	1	1	-	-	-	-	-	-	-	-	-
C107.5	3	2	3	1	1	-	-	-	-	-	-	-	-	-
C107	3	2.4	2.6	1	1	-	-	-	-	-.	-	-	-	-

COURSE NAME: BS3171- Physics and Chemistry Laboratory	
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 Name: GE3172 ENGLISH LABORATORY - C109

GE3172 ENGLISH LABORATORY - C109

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.2	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.3	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.4	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.5	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108	3	3	3	3	1	3	3	3	3	3	3	3	-	-

COURSE NAME: GE3172- English Laboratory	
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 Name: HS3252 Professional English - II C110

HS3252 Professional English - II C110													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	3	3	3	3	3	3	3	3	2	3	3	3	-	-
C109.2	3	3	3	3	3	3	3	3	2	3	3	3	-	-
C109.3	3	3	3	3	3	3	3	3	2	3	3	3	-	-
C109.4	3	3	3	3	2	3	3	3	2	3	3	3	-	-
C109.5	-	-	-	-	-	-	-	-	3	3	3	3	-	-
C109	3	3	3	3	2.75	3	3	3	2.2	3	3	3	-	-

COURSE NAME: HS3252- Professional English - II	
C110.1	To compare and contrast products and ideas in technical texts
C110.2	To identify and report cause and effects in events, industrial processes through technical texts
C110.3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format
C110.4	To present their ideas and opinions in a planned and logical manner
C110.5	To draft effective resumes in the context of job search

Course Name: MA3251 STATISTICS AND NUMERICAL METHODS - C112

MA3251 STATISTICS AND NUMERICAL METHODS - C112													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.2	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.3	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.4	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.5	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110	3	3	1	1	1	0	0	0	2	0	2	3	-	-

COURSE NAME: MA3251- Statistics and Numerical Methods	
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 second order ordinary differential equations
C111.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications

Course Name: PH3256 PHYSICS FOR INFORMATION SCIENCE C113

PH3256 PHYSICS FOR INFORMATION SCIENCE C113													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	2	2	-	3	-	-	-	2	2	-	1	-	2
C111.2	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C111.3	3	3	3	-	3	-	-	-	2	2	-	-	-	-
C111.4	3	-	-	-	-	-	-	-	-	2	-	-	-	-
C111.5	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C111	3	2.8	2.8	-	3	-	-	-	2	2	-	1.7	2	2

COURSE NAME: PH3256- Physics for Information Science	
C112.1	gain knowledge on classical and quantum electron theories, and energy band structures
C112.2	acquire knowledge on basics of semiconductor physics and its applications in various devices
C112.3	get knowledge on magnetic properties of materials and their applications in data storage
C112.4	have the necessary understanding on the functioning of optical materials for optoelectronics
C112.5	understand the basics of quantum structures and their applications and basics of quantum computing

Course Name: BE3251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING - C116

BE3251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING - C116													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112.2	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112.3	2	1	1	-	-	-	-	1	-	-	-	2	-	-
C112.4	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112.5	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112	2	1.8	1	-	-	-	-	1	-	-	-	2	-	-

COURSE NAME: BE3251- Basic Electrical and Electronics Engineering	
C113.1	Compute the electric circuit parameters for simple problems
C113.2	Explain the working principle and applications of electrical machines
C113.3	Analyze the characteristics of analog electronic devices
C113.4	Explain the basic concepts of digital electronics
C113.5	Explain the operating principles of measuring instruments

Course Name: GE3251 ENGINEERING GRAPHICS - C117

GE3251 ENGINEERING GRAPHICS - C117														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.2	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.3	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.4	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.5	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113	3	1	2	-	2	-	-	-	-	3	-	2	2	2

COURSE NAME: GE3251- Engineering Graphics	
C114.1	Use BIS conventions and specifications for engineering drawing.
C114.2	Construct the conic curves, involutes and cycloid.
C114.3	Solve practical problems involving projection of lines
C114.4	Draw the orthographic, isometric and perspective projections of simple solids
C114.5	Draw the development of simple solids

Course Name: CS3251 – PROGRAMMING IN C - C201

CS3251 – PROGRAMMING IN C - C201														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	1	2	2	1	2	1	1	1	2	-	3	2	1	2
C114.2	2	2	2	1	2	1	1	1	2	-	3	3	2	2
C114.3	2	3	2	1	2	1	1	1	2	-	3	2	2	2
C114.4	3	2	2	1	3	1	1	1	2	-	3	3	2	2
C114.5	2	3	3	1	2	1	2	1	2	-	3	2	2	3
C114	2	2	2	1	2	1	1	1	2	-	3	2	2	2

COURSE NAME: CS3251- Programming in C	
C115.1	Demonstrate knowledge on C Programming constructs
C115.2	Develop simple applications in C using basic constructs
C115.3	Design and implement applications using arrays and strings
C115.4	Develop and implement modular applications in C using functions
C115.5	Develop applications in C using structures and pointers
C115.6	Design applications using sequential and random access file processing.

Course Name: GE3271 – ENGINEERING PRACTICES LABORATORY - C202

GE3271 – ENGINEERING PRACTICES LABORATORY - C202														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	3	2	-	-	1	1	1	-	-	-	-	2	2	1
C115.2	3	2	-	-	1	1	1	-	-	-	-	2	2	1
C115.3	3	2	-	-	1	1	1	-	-	-	-	2	2	1
C115	3	2	-	-	1	1	1	-	-	-	-	2	2	1

COURSE NAME: GE3271-Engineering Practices Laboratory	
C116.1	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
C116.2	Wire various electrical joints in common household electrical wire work.
C116.3	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.
C116.4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Course Name: CS3271 – PROGRAMMING IN C LABORATORYS - C203

CS3271 – PROGRAMMING IN C LABORATORYS - C203														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	1	3	3	1	1	1	-	-	2	1	2	2	2	2
C116.2	2	3	3	2	1	1	-	-	2	1	2	2	2	3
C116.3	2	2	2	1	1	2	-	-	2	-	2	2	2	2
C116.4	2	2	2	2	1	2	-	-	3	-	3	3	3	2
C116.5	2	2	3	2	3	2	-	-	3	-	3	3	3	3
C116	2	2	3	2	1	2	-	-	2	1	2	2	2	2

COURSE NAME: CS3271- Programming in C Laboratory	
C117.1	Demonstrate knowledge on C programming constructs
C117.2	Develop programs in C using basic constructs
C117.3	Develop programs in C using arrays
C117.4	Develop applications in C using strings, pointers, functions
C117.5	Develop applications in C using structures
C117.6	Develop applications in C using file processing

Course Name: GE3272 – COMMUNICATION LABORATORY - C204

GE3272 – COMMUNICATION LABORATORY - C204														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C117.1	2	3	3	3	1	3	3	3	3	3	3	3	-	-
C117.2	2	3	3	3	1	3	3	3	3	3	3	3	-	-
C117.3	2	2	3	3	1	3	3	3	3	3	3	3	-	-
C117.4	3	3	3	3	3	3	3	3	3	3	3	3	-	-
C204.5	3	3	3	3	3	3	3	3	3	3	3	3	-	-
C204	2.4	2.8	3	3	1.8	3	3	3	3	3	3	3	-	-

COURSE NAME: GE3272- Communication Laboratory / Foreign Language	
C118.1	Speak effectively in group discussions held in a formal/semi formal contexts
C118.2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
C118.3	Write emails, letters and effective job applications
C118.4	Write critical reports to convey data and information with clarity and precision
C118.5	Give appropriate instructions and recommendations for safe execution of tasks

SEMESTER - III

Course Name: MA3354 –DISCRETE MATHEMATICS - C205

MA3354 –DISCRETE MATHEMATICS - C205														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	3	2	-	-	-	-	-	-	-	-	2	-	-
C205.2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C205.3	-	3	2	-	-	2	-	-	-	3	-	-	-	-
C205.4	-	2	2	2	-	-	-	-	-	-	-	-	-	-
C205.5	-	2	2	2	-	-	-	-	-	2	-	-	-	-
C205	1	3	2	1	-	-	-	-	-	1	-	-	-	-

COURSE NAME: MA3354- Discrete Mathematics	
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 Name: CS3351– DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION - C206

CS3351– DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION - C206														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	3	3	3	2	1	1	1	1	2	3	2	3
C206.2	3	3	3	3	2	1	1	1	1	1	2	3	1	2
C206.3	3	3	3	3	2	2	1	1	1	1	2	3	2	3
C206.4	3	3	3	3	1	1	1	1	1	1	1	2	1	3
C206.5	3	3	3	3	1	2	1	1	1	1	1	2	1	2
C206	3	3	3	3	1	2	1	1	1	1	1	2	1	2

COURSE NAME: CS3351 - Digital Principles and Computer Organization	
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 Name: FOUNDATIONS OF DATA SCIENCE - C207

CS3352 – FOUNDATIONS OF DATA SCIENCE - C207														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	2	2	1	2	2	-	-	-	1	1	1	2	2	2
C207.2	2	1	-	1	1	-	-	-	2	1	1	2	2	3
C207.3	2	2	1	2	2	1	1	-	1	2	1	3	2	2
C207.4	3	2	2	1	2	-	-	-	1	1	2	2	3	3
C207.5	2	2	1	2	2	-	-	-	1	1	1	2	2	2
C207	2	2	1	2	2	1	1	-	1	1	1	2	2	2

COURSE NAME: CS3352 - Foundations of Data Science	
C203.1	Define the data science process
C203.2	Understand different types of data description for data science process
C203.3	Gain knowledge on relationships between data
C203.4	Use the Python Libraries for Data Wrangling
C203.5	Apply visualization Libraries in Python to interpret and explore data

Course Name: CS3301 – DATA STRUCTURES - C208

CS3301 – DATA STRUCTURES - C208	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	2	3	1	2	2	1	1	-	1	2	1	3	2	1
C208.2	1	2	1	2	2	-	-	-	1	1	1	2	2	2
C208.3	2	3	1	2	3	-	-	-	1	1	1	2	2	1
C208.4	2	1	-	1	1	-	-	-	2	1	1	2	2	3
C208.5	1	2	1	2	2	1	1	-	1	2	1	3	2	2
C208	2	2	1	2	2	1	1	-	1	1	1	2	2	2

COURSE NAME: CS3301 - Data Structures	
C204.1	Define linear and non-linear data structures.
C204.2	Implement linear and non–linear data structure operations.
C204.3	Use appropriate linear/non–linear data structure operations for solving a given problem.
C204.4	Apply appropriate graph algorithms for graph applications.
C204.5	Analyze the various searching and sorting algorithms.

Course Name: CS3391 – OBJECT ORIENTED PROGRAMMING - C209

CS3391 – OBJECT ORIENTED PROGRAMMING - C209	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	1	1	3	1	3	-	-	-	3	2	2	2	3	1
C209.2	2	1	3	2	1	-	-	-	2	1	1	3	3	3
C209.3	3	3	1	2	2	-	-	-	3	2	1	2	3	1
C209.4	3	1	2	2	2	-	-	-	1	2	1	3	3	1
C209.5	1	1	2	3	2	-	-	-	3	2	1	2	3	3
C209	2	1	2	2	2	-	-	-	2	2	1	2	3	2

COURSE NAME: CS3391- Object Oriented Programming	
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 Name: CS3311 – DATA STRUCTURES LABORATORY - C210

CS3311 – DATA STRUCTURES LABORATORY - C210														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	1	2	2	1	-	-	-	-	2	1	2	2	2	2
C210.2	3	3	1	1	-	-	-	-	1	1	1	3	1	2
C210.3	2	1	3	1	-	-	-	-	1	1	2	3	3	3
C210.4	3	1	3	3	-	-	-	-	1	2	3	3	2	1
C210.5	3	2	1	1	2	-	-	-	3	3	3	1	3	1
C210	2	2	2	1	2	-	-	-	2	2	2	2	2	2

COURSE NAME: CS3311- Data Structures and Algorithms Laboratory	
C206.1	Implement Linear data structure algorithms.
C206.2	Implement applications using Stacks and Linked lists
C206.3	Implement Binary Search tree and AVL tree operations.
C206.4	Implement graph algorithms.
C206.5	Analyze the various searching and sorting algorithms.

Course Name: CS3381 – OBJECT ORIENTED PROGRAMMING LABORATORY C211

CS3381 – OBJECT ORIENTED PROGRAMMING LABORATORY C211														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	2	1	2	1	-	-	-	-	1	2	2	2	1	2
C211.2	2	1	3	1	-	-	-	-	2	3	3	2	1	3
C211.3	2	2	1	2	1	-	-	-	1	2	1	3	2	3
C211.4	2	2	1	3	-	-	-	-	3	1	1	1	2	1
C211.5	1	3	3	1	3	-	-	-	1	1	1	1	2	1
C211	2	2	2	2	2	-	-	-	2	2	2	2	2	2

COURSE NAME: CS3381- Object Oriented Programming Laboratory	
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 Name: CS3361 – DATA SCIENCE LABORATORY - C212

CS3361 – DATA SCIENCE LABORATORY - C212

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	1	1	-	-	-	-	1	3	3	3	1	3
C212.2	3	2	2	3	1	-	-	-	3	1	3	2	1	3
C212.3	3	2	1	3	1	-	-	-	2	1	1	1	3	2
C212.4	2	3	1	3	-	-	-	-	2	3	2	3	3	3
C212.5	1	2	3	1	1	-	-	-	2	1	3	1	1	3
C212	2	2	2	2	1	-	-	-	2	2	2	2	2	3

COURSE NAME: CS3361 - Data Science Laboratory	
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 Name: GE3361 – PROFESSIONAL DEVELOPMENT - C212

GE3361 – PROFESSIONAL DEVELOPMENT - C212

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	1	1	-	-	-	-	1	3	3	3	1	3
C212.2	3	2	2	3	1	-	-	-	3	1	3	2	1	3
C212.3	3	2	1	3	1	-	-	-	2	1	1	1	3	2
C212.4	2	3	1	3	-	-	-	-	2	3	2	3	3	3
C212.5	1	2	3	1	1	-	-	-	2	1	3	1	1	3
C212	2	2	2	2	1	-	-	-	2	2	2	2	2	3

COURSE NAME: GE3361- Professional Development	
C209.1	Use MS Word to create quality documents, by structuring and organizing content for their dayto day technical and academic requirements
C209.2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding
C209.3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.

Course Name: CS3452 – THEORY OF COMPUTATION - C213

CS3452 – THEORY OF COMPUTATION - C213														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	1	3	2	3	-	-	-	-	1	1	2	3	1	3
C213.2	2	2	3	2	1	-	-	-	3	3	2	3	3	1
C213.3	2	2	3	2	1	-	-	-	1	3	1	2	1	2
C213.4	2	2	2	1	-	-	-	-	1	3	3	2	1	3
C213.5	2	2	2	1	1	-	-	-	1	1	3	2	3	1
C213	2	2	2	2	1	-	-	-	1	2	2	2	2	2

COURSE NAME: CS3452- Theory of Computation	
C210.1	Construct automata theory using Finite Automata
C210.2	Write regular expressions for any pattern
C210.3	Design context free grammar and Pushdown Automata
C210.4	Design Turing machine for computational functions
C210.5	Differentiate between decidable and undecidable problems

Course Name: CS3491 – ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING - C214

CS3491 – ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING - C214														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	2	3	3	-	-	-	-	1	3	3	3	1	2
C214.2	1	1	1	3	1	-	-	-	1	2	1	3	2	3
C214.3	2	1	2	1	1	-	-	-	2	1	1	3	1	1
C214.4	3	1	3	1	-	-	-	-	2	1	2	1	2	2
C214.5	3	1	1	2	2	-	-	-	3	1	2	3	2	1
C214	2	1	2	2	1	-	-	-	2	2	2	3	2	2

COURSE NAME: CS3491- Artificial Intelligence and Machine Learning	
C211.1	Use 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 Name: CS3492-DATABASE MANAGEMENT SYSTEMS - C215

CS3492-DATABASE MANAGEMENT SYSTEMS - C215

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	2	2	3	2	1	-	-	-	2	1	1	1	2	1
C215.2	3	1	1	1	1	-	-	-	2	3	3	3	3	1
C215.3	3	2	3	2	1	-	-	-	2	1	1	2	2	3
C215.4	1	2	3	2	-	-	-	-	3	2	3	3	1	2
C215.5	1	1	3	3	2	-	-	-	1	3	3	1	2	2
C215	2	2	3.0	2	1	-	-	-	2	2	2	2	2	2

COURSE NAME: CS3492- Database Management Systems	
C212.1	Construct SQL Queries using relational algebra
C212.2	Design database using ER model and normalize the database
C212.3	Construct queries to handle transaction processing and maintain consistency of the database
C212.4	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database
C212.5	Appraise how advanced databases differ from Relational Databases and find a suitabledatabase for the given requirement.

Course Name: CS3401- ALGORITHMS - C216

CS3401- ALGORITHMS - C216

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	3	2	-	-	-		1	-	-	-	-	1	-	1
C216.2	2	3	-	-	-	-	1	-	-	-	-	1	-	1
C216.3	1	2	3	1	-	-	2	-	-	-	-	-	-	1
C216.4	1	1	-	-	-	-	-	-	-	-	-	-	-	-
C216.5	1	1	-	-	-	-	-	-	-	-	-	-	-	-
C216	2.67	1.8	3	1	-	-	1.33	-	-	-	-	1	-	1

COURSE NAME: CS3401- Algorithms	
C213.1	Analyze the efficiency of algorithms using various frameworks
C213.2	Apply graph algorithms to solve problems and analyze their efficiency.
C213.3	Make use of algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems
C213.4	Use the state space tree method for solving problems.
C213.5	Solve problems using approximation algorithms and randomized algorithms

Course Name: CS3451– INTRODUCTION TO OPERATING SYSTEMS - C217

CS3451– INTRODUCTION TO OPERATING SYSTEMS - C217

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	3	1	2	2	-	-	-	-	3	2	3	1	1	2
C217.2	2	2	3	1	1	-	-	-	2	1	1	2	2	1
C217.3	1	3	2	2	1	-	-	-	2	2	1	1	1	2
C217.4	1	3	3	3	-	-	-	-	1	2	1	2	1	3
C217.5	3	1	2	1	1	-	-	-	3	2	3	2	2	2
C217	2	2	2	2	1	-	-	-	2	2	2	2	1	2

COURSE NAME: CS3451- Introduction to Operating Systems	
C214.1	Analyze various scheduling algorithms and process synchronization.
C214.2	Explain deadlock prevention and avoidance algorithms.
C214.3	Compare and contrast various memory management schemes.
C214.4	Explain the functionality of file systems, I/O systems, and Virtualization
C214.5	Compare iOS and Android Operating Systems.

Course Name: GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY - C218

GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY - C218

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C218.1	2	1	-	-	-	2	3	-	-	-	-	2	-	-
C218.2	3	2	-	-	-	3	3	-	-	-	-	2	-	-
C218.3	3	-	1	-	-	2	2	-	-	-	-	2	-	-
C218.4	3	2	1	1	-	2	2	-	-	-	-	2	-	-
C218.5	3	2	1	-	-	2	2	-	-	-	-	1	-	-
C218	2.8	1.8	1	1	-	2.2	2.4	-	-	-	-	1.8	-	-

COURSE NAME: GE3451 Environmental Sciences and Sustainability	
C215.1	To recognize and understand the functions of environment, ecosystems and biodiversity andtheir conservation.
C215.2	To identify the causes, effects of environmental pollution and natural disasters and contributeto the preventive measures in the society.
C215.3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
C215.4	To recognize the different goals of sustainable development and apply them for suitabletechnological advancement and societal development.
C215.5	To demonstrate the knowledge of sustainability practices and identify green materials, energycycles and the role of sustainable urbanization.

Course Name: CS3461 OPERATING SYSTEMS LABORATORY- C301

CS3461 OPERATING SYSTEMS LABORATORY- C301

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	1	3	1	1	-	-	-	1	3	3	3	2	1
C301.2	3	1	1	2	2	-	-	-	3	2	1	1	3	1
C301.3	3	3	2	1	2	-	-	-	3	3	1	2	2	2
C301.4	1	2	2	3	2	-	-	-	3	1	3	1	1	2
C301.5	2	2	1	1	3	-	-	-	1	2	2	3	1	3
C301	2	2	2	2	2	-	-	-	2	2	2	2	2	2

COURSE NAME: CS3461 -Operating Systems Laboratory	
C216.1	Define and implement UNIX Commands.
C216.2	Compare the performance of various CPU Scheduling Algorithms.
C216.3	Compare and contrast various Memory Allocation Methods.
C216.4	Define File Organization and File Allocation Strategies.
C216.5	Implement various Disk Scheduling Algorithms

Course Name: CS3481 DATABASE MANAGEMENT SYSTEMS LABORATORY- C302

CS3481 DATABASE MANAGEMENT SYSTEMS LABORATORY- C302

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	3	3	3	3	-	-	-	-	3	1	3	2	2	3
C302.1	2	2	3	2	2	-	-	-	1	2	3	3	2	1
C302.3	3	3	2	1	1	-	-	-	1	1	1	3	2	3
C302.4	1	3	3	3	1	-	-	-	1	1	3	2	3	1
C302.5	3	2	1	1	1	-	-	-	2	2	3	1	3	1
C302	2	3	2	2	1	-	-	-	2	1	3	2	2	2

COURSE NAME: CS3481- Database Management Systems Laboratory	
C217.1	Create databases with different types of key constraints.
C217.2	Construct simple and complex SQL queries using DML and DCL commands.
C217.3	Use advanced features such as stored procedures and triggers and incorporate inGUI based application development.
C217.4	Create an XML database and validate with meta-data (XML schema).
C217.5	Create and manipulate data using NOSQL database.

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Course Name: CS3591-COMPUTER NETWORKS C303

CS3591-COMPUTER NETWORKS C303														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	-	2	-	-		-	-	-	-	-	-	-	3	-
C303.2	-	1	-	-	2	-	-	-	-	-	-	2	-	2
C303.3	-	2	-	-	3	-	-	-	-	-	-	-	-	3
C303.4	-		-	1	2	-	-	-	-	3	-	-	-	-
C303.5	-	3	2	-	-	-	-	-	-	-	-	-	-	-
C303	-	1	-	-	1	-	-	-	-	1	-	-	-	1

COURSE NAME: CS3591- Computer Networks	
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 Name: CS3501-COMPILER DESIGN- C304

CS3501-COMPILER DESIGN- C304														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	3	3	3	-	-	-	-	3	3	1	3	2	3
C304.2	3	3	3	3	3	-	-	-	3	2	3	2	2	1
C304.3	3	3	2	2	3	-	-	-	3	1	1	1	2	2
C303.4	3	2	2	1	1	-	-	-	2	3	2	3	1	2
C304.5	3	3	3	2	1	-	-	-	2	1	1	3	2	1
C304	3	2.8	2.6	2.2	2	-	-	-	2.6	2	1.6	2.4	1.8	1.8

COURSE NAME: CS3501- Compiler Design	
C302.1	Understand the techniques in different phases of a compiler.
C302.2	Design a lexical analyser for a sample language and learn to use the LEX tool.
C302.3	Apply different parsing algorithms to develop a parser and learn to use YACC tool
C302.4	Understand semantics rules (SDT), intermediate code generation and run-time environment.
C302.5	Implement code generation and apply code optimization techniques.

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Course Name: CB3491-CRYPTOGRAPHY AND CYBER SECURITY- C304

CB3491-CRYPTOGRAPHY AND CYBER SECURITY- C304														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	2	1	2	2	-	-	-	1	-	-	1	2	3
C304.2	3	3	3	3	3	-	-	-	2	-	-	1	3	3
C304.3	3	3	3	3	3	-	-	-	2	-	-	1	3	3
C303.4	3	3	3	3	3	-	-	-	2	-	-	1	3	3
C304.5	3	2	3	2	3	-	-	-	3	-	-	2	3	2
C304	3	2.6	2.6	2.6	2.8	-	-	-	2	-	-	1.2	2.8	2.8

COURSE NAME: CB3491-Cryptography and Cyber Security	
C303.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C303.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C303.3	Apply the different cryptographic operations of public key cryptography
C303.4	Apply the various Authentication schemes to simulate different applications.
C303.5	Understand various cyber crimes and cyber security.

Course Name: CS3551 DISTRIBUTED COMPUTING - C305

CS3551 DISTRIBUTED COMPUTING - C305														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	2	2	3	3	1	-	-	-	2	1	3	3	2	1
C305.2	1	3	2	1	2	-	-	-	2	2	2	2	1	3
C305.3	2	2	1	3	3	-	-	-	3	2	1	1	1	2
C305.4	1	2	2	3	1	-	-	-	3	3	2	1	3	1
C305.5	3	3	1	2	3	-	-	-	3	3	3	1	3	2
C305	1.8	2.4	1.8	2.4	2	-	-	-	2.6	2.2	2.2	1.6	2	1.8

COURSE NAME: CS3551- Distributed Computing	
C303.1	Explain the foundations of distributed systems (K2)
C303.2	Solve synchronization and state consistency problems (K3)
C303.3	Use resource sharing techniques in distributed systems (K3)
C303.4	Apply working model of consensus and reliability of distributed systems (K3)
C303.5	Explain the fundamentals of cloud computing (K2)

Course Name: CCS356-OBJECT ORIENTED SOFTWARE ENGINEERING-C309

CCS356-OBJECT ORIENTED SOFTWARE ENGINEERING-C309														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	2	2	1	2	2	-	-	-	-	1	1	2	2	2
C309.2	2	3	2	3	2	-	-	-	2	2	3	2	3	2
C309.3	2	3	2	1	1	-	-	-	2	2	3	2	2	3
C309.4	2	3	2	2	3	-	-	-	2	2	3	2	2	3
C309.5	2	3	1	2	2	-	-	-	-	-	-	1	3	2
C309	2	2	1	2	2	-	-	-	-	1	1	2	2	2

Course Name: CS3691-EMBEDDED SYSTEMS AND IOT-C310

CS3691-EMBEDDED SYSTEMS AND IOT-C310														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	3	3	3	-	-	-	-	1	2	3	3	2	1
C310.2	2	1	3	2	2	-	-	-	1	2	2	3	3	1
C310.3	3	1	3	3	1	-	-	-	1	2	1	1	1	3
C310.4	3	2	3	2	1	-	-	-	1	2	2	3	2	2
C310.5	2	3	3	2	2	-	-	-	1	3	3	2	3	1
C310	2.6	2	3	2.4	1.5	-	-	-	1	2.2	2.2	2.4	2.2	1.6

VERTICALS

Course Name: CCS346- EXPLORATORY DATA ANALYSIS-C311

CCS346- EXPLORATORY DATA ANALYSIS-C311														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	2	3	3	3	-	-	-	2	2	3	2	3	3
C311.2	2	2	2	3	3	-	-	-	3	2	2	2	1	2
C311.3	2	3	2	2	3	-	-	-	2	2	2	1	2	3
C311.4	2	2	2	2	3	-	-	-	3	2	2	1	2	2
C311.5	2	2	3	2	1	-	-	-	1	2	2	1	2	2
C311	2.2	2.2	2.4	2.4	2.6	-	-	-	2.2	2	2.2	1.4	2	2.4

COURSE NAME:CCS346-Exploratory Data Analysis	
C304.1	Understand the fundamentals of exploratory data analysis.
C304.2	Implement the data visualization using Matplotlib.
C304.3	Perform univariate data exploration and analysis.
C304.4	Apply bivariate data exploration and analysis.
C304.5	Use Data exploration and visualization techniques for multivariate and time series data.

Course Name: CCS360-RECOMMENDER SYSTEMS-C312

CCS360-RECOMMENDER SYSTEMS-C312	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	2	2	1	2	1	-	-	-	1	-	-	1	-	-
C312.2	1	2	-	-	1	-	-	-	-	-	-	1	-	-
C312.3	2	3	1	-	1	-	-	-	2	-	-	-	-	-
C312.4	3	2	2	2	1	-	-	-	2	-	-	2	-	-
C312.5	1	1	-	2	1	-	-	-	-	-	-	1	-	-
C312.6	2	2	1	1	1	-	-	-	-	-	-	1	-	-
C312	1.83	2	0.83	1.16	1	-	-	-	0.83	-	-	1	-	-

COURSE NAME: CCS360 - Recommender Systems	
C305.1	Understand the basic concepts of recommender systems.
C305.2	Implement machine-learning and data-mining algorithms in recommender systems data sets.
C305.3	Implementation of Collaborative Filtering in carrying out performance evaluation of recommender systems based on various metrics.
C305.4	Design and implement a simple recommender system.
C305.5	Learn about advanced topics of recommender systems.
C305.6	Learn about advanced topics of recommender systems applications

Course Name: CCS355- NEURAL NETWORKS AND DEEP LEARNINGC313

CCS355- NEURAL NETWORKS AND DEEP LEARNINGC313	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	3	2	3	2	3	1	-	-	2	1	-	-	2	2
C313.2	3	1	2	1	-	-	-	-	-	1	2	2	-	1
C313.3	3	3	3	3	3	1	-	-	2	1	-	-	2	2
C313.4	3	3	3	3	3	-	-	-	2	-	2	3	2	2
C313.5	1	1	3	2	3	-	-	-	2	-	-	-	1	1
C313	2.6	2	2.8	2.2	2.4	0.4	0	0	1.6	0.6	0.8	1	1.4	1.6

COURSE NAME: CCS355- Neural Networks and Deep Learning	
C306.1	Apply Convolution Neural Network for image processing.
C306.2	Understand the basics of associative memory and unsupervised learning networks.
C306.3	Apply CNN and its variants for suitable applications.
C306.4	Analyze the key computations underlying deep learning and use them to build and train deep neural networks for various tasks.
C306.5	Apply autoencoders and generative models for suitable applications.

Course Name: CCS369- TEXT AND SPEECH ANALYSIS-C314

CCS369- TEXT AND SPEECH ANALYSIS-C314

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	3	2	3	1	3	-	-	-	1	2	1	2	1	1
C314.2	3	1	2	1	3	-	-	-	2	2	1	3	3	2
C314.3	2	2	1	3	1	-	-	-	3	3	1	2	3	3
C314.4	2	1	1	1	2	-	-	-	2	1	2	2	3	1
C314.5	1	3	2	2	1	-	-	-	3	2	1	1	2	3
C314	2.2	1.8	1.8	1.6	2	-	-	-	2.2	2	1.2	2	2.4	2

COURSE NAME: CCS369- Text And Speech Analysis	
C307.1	Explain existing and emerging deep learning architectures for text and speech processing
C307.2	Apply deep learning techniques for NLP tasks, language modelling and machine translation
C307.3	Explain coreference and coherence for text processing
C307.4	Build question-answering systems, chatbots and dialogue systems
C307.5	Apply deep learning models for building speech recognition and text-to-speech systems

Course Name: CCW331-BUSINESS ANALYTICS-C316

CCW331-BUSINESS ANALYTICS-C316

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	2	2	3	1	1	-	-	-	1	2	1	1	3	2
C316.2	3	3	3	2	3	-	-	-	1	2	2	2	3	1
C316.3	2	2	3	3	2	-	-	-	3	1	1	3	3	1
C316.4	2	1	1	2	2	-	-	-	3	3	2	1	1	3
C316.5	2	3	2	3	2	-	-	-	3	3	1	3	3	1
C316	2.2	2.2	2.4	2.2	2	-	-	-	2.2	2.2	1.4	2	2.6	1.6

COURSE NAME: CCW331-Business Analytics	
C308.1	Explain the real world business problems and model with analytical solutions.
C308.2	Identify the business processes for extracting Business Intelligence
C308.3	Apply predictive analytics for business fore-casting
C308.4	Apply analytics for supply chain and logistics management
C308.5	Use analytics for marketing and sales.

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Course Name: CCS349- IMAGE AND VIDEO ANALYTICS-C317

CCS349- IMAGE AND VIDEO ANALYTICS-C317

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	3	1	2	2	2	-	-	-	3	3	2	1	2	1
C317.2	2	2	3	3	3	-	-	-	3	2	1	1	2	2
C317.3	1	2	2	2	3	-	-	-	1	2	1	2	1	1
C317.4	1	2	3	2	3	-	-	-	2	2	2	3	2	2
C317.5	3	2	1	3	2	-	-	-	2	1	1	3	3	2
C317	2	1.8	2.2	2.4	2.6	-	-	-	2.2	2	1.4	2	2	1.6

COURSE NAME: CCS349- Image and Video Analytics	
C309.1	Understand the basics of image processing techniques for computer vision and video analysis.
C309.2	Explain the techniques used for image pre-processing.
C309.3	Develop various object detection techniques.
C309.4	Understand the various face recognition mechanisms.
C309.5	Elaborate on deep learning-based video analytics.

Course Name: CCS338-COMPUTER VISION-C318

CCS338-COMPUTER VISION-C318

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	3	1	1	1	1	-	-	-	2	1	3	2	2	1
C318.2	3	3	3	2	3	-	1	-	2	1	2	2	3	1
C318.3	3	3	2	2	3	-	-	-	1	1	2	2	3	2
C318.4	2	3	3	2	3	-	-	-	2	1	2	3	2	2
C318.5	2	3	3	2	2	2	-	-	3	1	2	3	3	3
C318	2.6	2.6	2.4	1.8	2.4	0.4	0.25	0	2	1	2.2	2.4	2.6	1.8

COURSE NAME: CCS338-Computer Vision	
C310.1	To understand basic knowledge, theories and methods in image processing and computer vision.
C310.2	To implement basic and some advanced image processing techniques in OpenCV.
C310.3	To apply 2D a feature-based based image alignment, segmentation and motion estimations.
C310.4	To apply 3D image reconstruction techniques
C310.5	To design and develop innovative image processing and computer vision applications.

Course Name: CCS334- BIG DATA ANALYTICS-C320

CCS334- BIG DATA ANALYTICS-C320

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C320.1	3	3	3	3	3	-	-	-	2	2	3	1	1	3
C320.2	3	3	2	3	2	-	-	-	2	2	3	3	2	3
C320.3	3	3	3	2	3	-	-	-	2	2	1	2	2	3
C320.4	2	3	3	3	3	-	-	-	2	2	3	2	3	3
C320.5	3	3	3	3	3	-	-	-	3	1	3	2	3	2
C320	2.8	3	2.8	2.8	2.8	-	-	-	2.2	1.8	2.6	2	2.2	2.8

COURSE NAME: CCS334 – Big Data Analytics

C311.1	Describe big data and use cases from selected business domains.
C311.2	Explain NoSQL big data management.
C311.3	Install, configure, and run Hadoop and HDFS.
C311.4	Perform map-reduce analytics using Hadoop.
C311.5	Use Hadoop-related tools such as HBase, Cassandra, Pig, and Hive for big data analytics.

Course Name: CCS375- WEB TECHNOLOGIES - C401

CCS375- WEB TECHNOLOGIES - C401

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	2	3	3	3	-	-	-	1	3	3	1	3	2
C401.2	2	2	2	1	2	-	-	-	2	2	1	3	2	2
C401.3	1	1	3	2	3	-	-	-	1	2	1	1	1	2
C401.4	2	3	3	1	2	-	-	-	3	1	2	2	2	2
C401.5	1	2	3	2	2	-	-	-	2	1	3	1	1	1
C401	1.8	2	2.8	1.8	2.4	-	-	-	1.8	1.8	2	1.6	1.8	1.8

COURSE NAME: CCS334 – Web Technologies

C312.1	Construct a basic website using HTML and Cascading Style Sheets
C312.2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
C312.3	Develop server side programs using Servlets and JSP.
C312.4	Construct simple web pages in PHP and to represent data in XML format.
C312.5	Develop interactive web applications.

Course Name: CCS332- APP DEVELOPMENT - C402

CCS332- APP DEVELOPMENT - C402														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	2	2	1	2	3	-	-	-	1	1	2	1	2	3
C402.2	2	1	3	2	2	-	-	-	3	2	2	3	3	2
C402.3	2	2	2	1	2	-	-	-	1	1	1	1	1	1
C402.4	1	3	1	1	3	-	-	-	1	1	3	2	1	3
C402.5	1	1	3	1	3	-	-	-	1	1	2	1	3	2
C402	1.6	1.8	2	1.4	2.6	-	-	-	1.4	1.2	2	1.6	2	2.2

COURSE NAME: CCS332 - App Development	
C313.1	Develop Native applications with GUI Components.
C313.2	Develop hybrid applications with basic event handling.
C313.3	Implement cross-platform applications with location and data storage capabilities.
C313.4	Implement cross platform applications with basic GUI and event handling.
C313.5	Develop web applications with cloud database access.

Course Name: CCS336- CLOUD SERVICES MANAGEMENT-C406

CCS336- CLOUD SERVICES MANAGEMENT-C406														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	3	3	1	1	1	-	-	-	2	1	3	2	2	1
C406.2	3	1	2	3	2	-	-	-	1	2	3	1	2	2
C406.3	1	1	3	1	3	-	-	-	3	3	1	1	3	2
C406.4	1	1	1	2	3	-	-	-	2	3	3	1	1	1
C406.5	1	3	3	2	2	-	-	-	1	3	1	2	1	3
C406	1.8	1.8	2	1.8	2.2	-	-	-	1.8	2.4	2.2	1.4	1.8	1.8

COURSE NAME: CCS336 - Cloud Services Management	
C314.1	Exhibit cloud-design skills to build and automate business solutions using cloud technologies.
C314.2	Possess Strong theoretical foundation leading to excellence and excitement towards adoption of cloud-based services
C314.3	Solve the real world problems using Cloud services and technologies

Course Name: CCS370- UI AND UX DESIGN - C407

CCS370- UI AND UX DESIGN - C407

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	3	1	1	3	1	-	-	-	3	3	2	1	3	3
C407.2	2	3	1	3	2	-	-	-	1	2	2	2	1	2
C407.3	1	3	3	2	2	-	-	-	2	3	1	2	1	3
C407.4	1	2	3	3	1	-	-	-	3	2	1	3	3	3
C407.5	1	2	3	2	1	-	-	-	2	1	1	1	3	2
C407	1.6	2.2	2.2	2.6	1.4	-	-	-	2.2	2.2	1.4	1.8	2.2	2.6

COURSE NAME: CCS370 - UI and UX Design	
C315.1	Build UI for user Applications
C315.2	Evaluate UX design of any product or application
C315.3	Demonstrate UX Skills in product development
C315.4	Implement Sketching principles
C315.5	Create Wireframe and Prototype

Course Name: CCS366- SOFTWARE TESTING AND AUTOMATION - C410

CCS366- SOFTWARE TESTING AND AUTOMATION - C410

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	3	3	2	1	2	-	-	-	1	1	3	2	3	2
C410.2	2	3	1	1	1	-	-	-	2	2	1	2	1	2
C410.3	2	2	1	3	1	-	-	-	1	3	1	2	2	3
C410.4	2	1	3	2	1	-	-	-	1	1	1	2	3	1
C410.5	2	2	1	3	1	-	-	-	1	3	2	1	2	1
C410	2.2	2.2	1.6	2	1.2	-	-	-	1.2	2	1.6	1.8	2.2	1.8

COURSE NAME: CCS366 - Software Testing and Automation	
C316.1	Understand the basic concepts of software testing and the need for software testing
C316.2	Design Test planning and different activities involved in test planning
C316.3	Design effective test cases that can uncover critical defects in the application
C316.4	Carry out advanced types of testing
C316.5	Automate the software testing using Selenium and Testing

Course Name: CCS374- WEB APPLICATION SECURITY – C315

CCS374- WEB APPLICATION SECURITY – C315

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	1	2	2	1	3	-	-	-	-	-	-	1	-	-
C315.2	2	1	2	1	3	-	-	-	-	-	-	-	-	-
C315.3	1	1	1	2	3	-	-	-	-	-	-	1	-	-
C315.4	1	2	1	1	2	-	-	-	-	-	-	-	-	-
C315.5	1	2	2	2	2	-	-	-	-	-	-	1	-	-
C315	1.2	1.6	1.6	1.4	2.6	-	-	-	-	-	-	0.6	-	-

COURSE NAME: CCS374 - Web Application Security	
C317.1	Understanding the basic concepts of web application security and the need for it
C317.2	Be acquainted with the process for secure development and deployment of web applications
C317.3	Acquire the skill to design and develop Secure Web Applications that use Secure APIs
C317.4	Be able to get the importance of carrying out vulnerability assessment and penetration testing
C317.5	Acquire the skill to think like a hacker and to use hackers tool sets

Course Name: CCS342 - DEVOPS – C321

CCS342 - DEVOPS – C321

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C321.1	3	3	3	2	3	-	-	-	-	-	-	-	2	2
C321.2	3	3	3	2	3	-	-	-	-	-	-	-	2	2
C321.3	3	3	3	2	3	-	-	-	-	-	-	-	2	2
C321.4	3	3	3	2	3	-	-	-	-	-	-	-	2	2
C321.5	3	3	3	2	3	-	-	-	-	-	-	-	2	2
C321	3	3	3	2	3	-	-	-	-	-	-	-	2	2

COURSE NAME: CCS342 - DEVOPS	
C318.1	Understand different actions performed through Version control tools like Git.
C318.2	Perform Continuous Integration and Continuous Testing and Continuous Deployment using Jenkins by building and automating test cases using Maven & Gradle.
C318.3	Ability to Perform Automated Continuous Deployment
C318.4	Ability to do configuration management using Ansible
C318.5	Understand to leverage Cloud-based DevOps tools using Azure DevOps

Course Name: CCS335- CLOUD COMPUTING – C323

CCS335- CLOUD COMPUTING – C323

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C323.1	3	2	1	1	1	-	-	-	2	3	1	3	2	1
C323.2	3	1	2	2	1	-	-	-	1	2	1	3	2	2
C323.3	2	3	2	3	1	-	-	-	3	1	1	3	1	1
C323.4	1	2	3	3	3	-	-	-	3	3	1	2	1	3
C323.5	2	3	3	1	3	-	-	-	2	2	1	2	2	2
C323	2.2	2.2	2.2	2	1.8	-	-	-	2.2	2.2	1	2.6	1.6	1.8

COURSE NAME: CCS335 - Cloud Computing

C320.1	Understand the design challenges in the cloud.
C320.2	Apply the concept of virtualization and its types.
C320.3	Experiment with virtualization of hardware resources and Docker.
C320.4	Develop and deploy services on the cloud and set up a cloud environment.
C320.5	Explain security challenges in the cloud environment.

Course Name: CCS372- VIRTUALIZATION – C324

CCS372- VIRTUALIZATION – C324

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C324.1	1	3	1	3	2	-	-	-	1	1	3	1	2	3
C324.2	3	2	2	1	2	-	-	-	1	2	2	3	3	2
C324.3	3	2	1	3	1	-	-	-	2	2	1	3	3	3
C324.4	1	1	2	3	3	-	-	-	3	3	1	1	3	2
C324.5	1	3	2	3	1	-	-	-	2	1	3	3	1	1
C324	1.8	2.2	1.6	2.6	1.8	-	-	-	1.8	1.8	2	2.2	2.4	2.2

COURSE NAME: CCS372 - Virtualization

C321.1	Analyse the virtualization concepts and Hypervisor
C321.2	Apply the Virtualization for real-world applications
C321.3	Install & Configure the different VM platforms
C321.4	Experiment with the VM with various software

Course Name: CCS341- DATA WAREHOUSING– C325

CCS341- DATA WAREHOUSING– C325

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C325.1	3	3	3	2	2	-	-	-	3	-	-	3	-	-
C325.2	3	2	2	2	3	-	-	-	2	-	2	2	-	-
C325.3	3	3	3	3	-	-	-	-	-	-	-	3	-	-
C325.4	3	3	3	3	-	-	-	-	-	-	-	3	-	-
C325.5	3	2	2	2	-	2	-	-	-	-	2	2	-	-
C325	3	2.6	2.6	1.2	2.5	1	-	-	2.5	-	2	2.6	-	-

COURSE NAME: CCS341 - Data Warehousing	
C322.1	Design data warehouse architecture for various Problems
C322.2	Apply the OLAP Technology
C322.3	Analyse the partitioning strategy
C322.4	Critically analyze the differentiation of various schema for given problem
C322.5	Frame roles of process manager & system manager

Course Name: CCS367-STORAGE TECHNOLOGIES – C326

CCS367-STORAGE TECHNOLOGIES – C326

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C326.1	1	2	1	3	3	-	-	-	1	1	1	3	1	2
C326.2	3	1	2	3	3	-	-	-	3	2	3	2	2	3
C326.3	1	1	3	2	2	-	-	-	3	1	1	2	2	3
C326.4	3	2	1	2	2	-	-	-	1	1	3	1	3	2
C326.5	1	3	2	1	2	-	-	-	1	2	3	1	3	2
C326	1.8	1.8	1.8	2.2	2.4	-	-	-	1.8	1.4	2.2	1.8	2.2	2.4

COURSE NAME: CCS367 - Storage Technologies	
C323.1	Demonstrate the fundamentals of information storage management and various models of Cloud infrastructure services and deployment
C323.2	Illustrate the usage of advanced intelligent storage systems and RAID
C323.3	Interpret various storage networking architectures - SAN, including storage subsystems and virtualization
C323.4	Examine the different role in providing disaster recovery and remote replication technologies
C323.5	Infer the security needs and security measures to be employed in information storage management

Course Name: CCS365-SOFTWARE DEFINED NETWORKS– C404

CCS365-SOFTWARE DEFINED NETWORKS– C404														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	1	2	3	1	3	-	-	-	2	3	1	3	1	2
C404.2	2	1	2	2	3	-	-	-	2	2	2	2	1	3
C404.3	2	2	2	3	3	-	-	-	3	1	1	2	1	3
C404.4	2	2	2	3	1	-	-	-	1	3	1	2	2	2
C404.5	3	3	1	1	3	-	-	-	1	2	1	2	2	1
C404	2	2	2	2	2.6	-	-	-	1.8	2.2	1.2	2.2	1.4	2.2

COURSE NAME: CCS365 - Software Defined Networks	
C324.1	Describe the motivation behind SDN
C324.2	Identify the functions of the data plane and control plane
C324.3	Design and develop network applications using SDN
C324.4	Orchestrate network services using NFV
C324.5	Explain various use cases of SDN and NFV

Course Name: CCS368- STREAM PROCESSING– C411

CCS368- STREAM PROCESSING– C411														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	3	3	2	3	1	-	-	-	2	3	1	2	1	3
C411.2	2	1	1	2	2	-	-	-	3	2	2	3	1	2
C411.3	3	1	2	3	3	-	-	-	2	2	1	1	2	2
C411.4	2	1	3	3	3	-	-	-	3	3	1	1	1	2
C411.5	3	3	1	2	2	-	-	-	3	3	2	3	2	3
C411	2.6	1.8	1.8	2.6	2.2	-	-	-	2.6	2.6	1.4	2	1.4	2.4

COURSE NAME: CCS368 - Stream Processing	
C325.1	Understand the applicability and utility of different streaming algorithms.
C325.2	Describe and apply current research trends in data-stream processing.
C325.3	Analyze the suitability of stream mining algorithms for data stream systems.
C325.4	Program and build stream processing systems, services and applications.
C325.5	Solve problems in real-world applications that process data streams.

Course Name: CCS362- SECURITY AND PRIVACY IN CLOUD– C412

CCS362- SECURITY AND PRIVACY IN CLOUD– C412														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3	3	1	2	-	-	-	1	1	1	3	3	1
C412.2	1	3	2	3	1	-	-	-	2	2	3	2	3	1
C412.3	3	2	2	3	2	-	-	-	3	1	1	2	2	3
C412.4	2	1	2	3	3	-	-	-	3	2	3	3	1	1
C412.5	1	3	3	1	1	-	-	-	2	3	3	2	2	3
C412	2	2.4	2.4	2.2	1.8	-	-	-	2.2	1.8	2.2	2.4	2.2	1.8

COURSE NAME: CCS362 - Security and Privacy In Cloud	
C326.1	Understand the cloud concepts and fundamentals.
C326.2	Explain the security challenges in the cloud.
C326.3	Define cloud policy and Identity and Access Management.
C326.4	Understand various risks and audit and monitoring mechanisms in the cloud.
C326.5	Define the various architectural and design considerations for security in the cloud.

Course Name: CCS344- ETHICAL HACKING– C413

CCS344- ETHICAL HACKING– C413														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C413.1	2	2	3	2	1	-	-	-	1	2	2	1	1	2
C413.2	1	2	1	2	1	-	-	-	2	2	1	1	1	2
C413.3	2	2	3	3	1	-	-	-	1	2	1	2	2	3
C413.4	2	1	1	2	1	-	-	-	1	3	3	3	3	2
C413.5	2	3	1	1	2	-	-	-	2	1	1	1	1	1
C413	1.8	2	1.8	2	1.2	-	-	-	1.4	2	1.6	1.6	1.6	2

COURSE NAME: CCS344 - Ethical Hacking	
C327.1	To express knowledge on basics of computer based vulnerabilities
C327.2	To gain understanding on different foot printing, reconnaissance and scanning methods.
C327.3	To demonstrate the enumeration and vulnerability analysis methods
C327.4	To gain knowledge on hacking options available in Web and wireless applications.
C327.5	To acquire knowledge on the options for network protection.
C327.6	To use tools to perform ethical hacking to expose the vulnerabilities.

Course Name: CCS343- DIGITAL AND MOBILE FORENSICS – C414

CCS343- DIGITAL AND MOBILE FORENSICS – C414

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C414.1	3	1	3	2	1	-	-	-	1	1	3	3	1	3
C414.2	3	3	3	3	3	-	-	-	2	2	1	2	1	3
C414.3	3	3	2	3	1	-	-	-	3	2	1	1	3	2
C414.4	3	1	2	2	3	-	-	-	1	3	3	2	1	3
C414.5	1	3	2	3	2	-	-	-	2	3	2	3	1	2
C414	3	2	2	3	2	-	-	-	2	2	2	2	1	3

COURSE NAME: CCS343 - Digital and Mobile Forensics	
C328.1	Have knowledge on digital forensics.
C328.2	Know about digital crime and investigations.
C328.3	Be forensic ready.
C328.4	Investigate, identify and extract digital evidence from iOS devices.
C328.5	Investigate, identify and extract digital evidence from Android devices.

Course Name: CCS363- SOCIAL NETWORK SECURITY – C415

CCS363- SOCIAL NETWORK SECURITY – C415

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C415.1	3	1	2	3	2	-	-	-	3	2	1	2	3	3
C415.2	2	2	2	3	3	-	-	-	1	2	2	3	3	3
C415.3	2	1	1	3	2	-	-	-	1	2	1	1	1	3
C415.4	3	3	3	3	2	-	-	-	1	1	1	1	2	1
C415.5	1	3	2	2	2	-	-	-	1	1	3	1	2	3
C415	2.2	2	2	2.8	2.2	-	-	-	1.4	1.6	1.6	1.6	2.2	2.6

COURSE NAME: CCS363 - Social Network Security	
C329.1	Develop semantic web related simple applications
C329.2	Address Privacy and Security issues in Social Networking
C329.3	Explain the data extraction and mining of social networks
C329.4	Discuss the prediction of human behavior in social communities
C329.5	Describe the applications of social networks

Course Name: CCS351-MODERN CRYPTOGRAPHY – C416

CCS351-MODERN CRYPTOGRAPHY – C416														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C416.1	3	3	3	3	1	-	-	-	2	1	1	2	2	1
C416.2	1	3	2	1	2	-	-	-	3	2	2	2	2	1
C416.3	1	1	2	3	2	-	-	-	1	1	1	3	1	1
C416.4	3	1	2	1	3	-	-	-	3	2	1	2	3	2
C416.5	2	3	3	3	3	-	-	-	3	1	1	1	2	1
C416	2	2.2	2.4	2.2	2.2	-	-	-	2.4	1.4	1.2	2	2	1.2

COURSE NAME: CCS351 - Modern Cryptography	
C330.1	Interpret the basic principles of cryptography and general cryptanalysis.
C330.2	Determine the concepts of symmetric encryption and authentication.
C330.3	Identify the use of public key encryption, digital signatures, and key establishment.
C330.4	Articulate the cryptographic algorithms to compose, build and analyze simple cryptographic solutions.
C330.5	Express the use of Message Authentication Codes.

Course Name: CB3591- ENGINEERING SECURE SOFTWARE SYSTEMS – C405

CB3591- ENGINEERING SECURE SOFTWARE SYSTEMS – C405														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	2	3	2	3	2	-	-	-	2	1	2	2	2	2
C405.2	2	2	2	3	3	-	-	-	2	1	2	2	1	2
C405.3	1	2	2	2	1	-	-	-	1	1	2	1	2	2
C405.4	2	3	2	2	2	-	-	-	2	1	2	2	2	2
C405.5	2	1	2	2	3	-	-	-	2	1	1	2	2	1
C405	1.8	2.2	2	2.4	2.2	-	-	-	1.8	1	1.8	1.8	1.8	1.8

COURSE NAME: CB3591 - Engineering Secure Software Systems	
C331.1	Identify various vulnerabilities related to memory attacks.
C331.2	Apply security principles in software development.
C331.3	Evaluate the extent of risks.
C331.4	Involve selection of testing techniques related to software security in the testing phase of software development.
C331.5	Use tools for securing software.

Course Name: CCS339- CRYPTOCURRENCY AND BLOCKCHAIN TECHNOLOGIES– C417

CCS339- CRYPTOCURRENCY AND BLOCKCHAIN TECHNOLOGIES– C417

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C417.1	3	3	2	2	1	-	-	-	1	-	-	2	3	1
C417.2	3	3	3	3	1	-	-	-	2	-	-	2	1	2
C417.3	3	3	3	3	2	-	-	-	3	-	-	2	2	3
C417.4	3	2	3	2	3	-	-	-	3	-	-	2	2	2
C417	3	2.75	2.75	2.5	1.75				2.25			2	3	2.75

COURSE NAME: CB3591 - Cryptocurrency and Blockchain Technologies	
C332.1	Understand emerging abstract models for Blockchain Technology
C332.2	Identify major research challenges and technical gaps existing between theory and practice in the crypto currency domain.
C332.3	It provides conceptual understanding of the function of Blockchain as a method of securing distributed ledgers, how consensus on their contents is achieved, and the new applications that they enable.
C332.4	Apply hyperledger Fabric and Ethereum platform to implement the Block chain Application.

Course Name: CCS354-NETWORK SECURITY – C418

CCS354-NETWORK SECURITY – C418

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C418.1	3	3	2	2	2	-	-	-	2	1	2	1	2	3
C418.2	1	1	3	2	2	-	-	-	2	2	1	1	3	1
C418.3	1	2	1	1	2	-	-	-	3	3	1	3	2	1
C418.4	2	2	3	2	3	-	-	-	3	3	2	1	2	1
C418.5	2	1	3	2	2	-	-	-	2	1	1	3	2	1
C418	1.8	1.8	2.4	1.8	2.2	-	-	-	2.4	2	1.4	1.8	2.2	1.4

COURSE NAME: CCS354 - Network Security	
C333.1	Classify the encryption techniques
C333.2	Illustrate the key management technique and authentication.
C333.3	Evaluate the security techniques applied to network and transport layer
C333.4	Discuss the application layer security standards.
C333.5	Apply security practices for real time applications.

Course Name: CCS333- AUGMENTED REALITY/VIRTUAL REALITY– C419

CCS333- AUGMENTED REALITY/VIRTUAL REALITY– C419

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C419.1	3	2	2	-	3	-	-	-	2	2	1	2	2	1
C419.2	3	2	2	1	3	-	-	-	3	2	2	3	3	1
C419.3	3	3	2	2	3	-	-	-	3	2	1	2	3	2
C419.4	3	3	3	2	3	-	-	-	3	2	2	3	3	2
C419.5	3	3	3	3	3	-	-	-	3	3	3	3	3	3
C419	3	2.6	2.4	2	3	-	-	-	2.8	2.2	1.8	2.6	2.8	1.8

COURSE NAME: CCS333 - Augmented Reality/Virtual Reality	
C334.1	Understand the basic concepts of AR and VR
C334.2	Understand the tools and technologies related to AR/VR
C334.3	Know the working principle of AR/VR related Sensor devices
C334.4	Design of various models using modeling techniques
C334.5	Develop AR/VR applications in different domains

Course Name: CCS352- MULTIMEDIA AND ANIMATION – C420

CCS352- MULTIMEDIA AND ANIMATION – C420

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C420.1	3	2	3	2	3	-	-	-	3	2	1	2	3	2
C420.2	3	3	3	3	3	-	-	-	3	3	2	2	3	2
C420.3	3	3	3	3	3	-	-	-	3	3	2	3	3	2
C420.4	3	3	3	3	3	2	-	-	3	3	3	3	3	3
C420.5	3	3	3	3	3	2	-	-	3	3	3	3	3	3
C420	3	2.8	3	2.8	3	2	-	-	3	2.8	2.2	2.6	3	2.4

COURSE NAME: CCS352 - Multimedia and Animation	
C335.1	Get the bigger picture of the context of Multimedia and its applications
C335.2	Use the different types of media elements of different formats on content pages
C335.3	Author 2D and 3D creative and interactive presentations for different target multimedia applications.
C335.4	Use different standard animation techniques for 2D, 21/2 D, 3D applications
C335.5	Understand the complexity of multimedia applications in the context of cloud, security, bigdata streaming, social networking, CBIR etc.,

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NAMAKKAL DL TAMIL NADU.

Course Name: CCS371- VIDEO CREATION AND EDITING – C421

CCS371- VIDEO CREATION AND EDITING – C421														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C421.1	3	1	2	1	1	-	-	-	1	2	3	2	3	1
C421.2	2	3	3	3	1	-	-	-	1	2	2	1	1	1
C421.3	2	2	3	3	1	-	-	-	3	1	1	1	2	1
C421.4	2	2	2	2	1	-	-	-	3	1	1	1	2	2
C421.5	2	1	3	3	1	-	-	-	3	2	1	2	2	2
C421	2.2	1.8	2.6	2.4	1	-	-	-	2.2	1.6	1.6	1.4	2	1.4

COURSE NAME: CCS371 - Video Creation and Editing	
C336.1	Compare the strengths and limitations of Nonlinear editing.
C336.2	Identify the infrastructure and significance of storytelling.
C336.3	Apply suitable methods for recording to CDs and VCDs.
C336.4	Address the core issues of advanced editing and training techniques.
C336.5	Design and develop projects using AVID XPRESS DV 4

Course Name: CCW332- DIGITAL MARKETING – C422

CCW332- DIGITAL MARKETING – C422														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C422.1	3	3	2	1	3	-	-	-	1	2	3	3	3	3
C422.2	2	2	2	1	3	-	-	-	1	2	3	3	3	3
C422.3	1	1	1	2	2	-	-	-	1	2	1	1	3	2
C422.4	3	2	2	3	1	-	-	-	1	3	2	3	2	3
C422.5	2	3	1	3	3	-	-	-	2	3	1	2	1	2
C422	2.2	2.2	1.6	2	2.4	-	-	-	1.2	2.4	2	2.4	2.4	2.6

COURSE NAME: CCW332 - Digital Marketing	
C337.1	To examine and explore the role and importance of digital marketing in today's rapidly changing business environment.
C337.2	To focuses on how digital marketing can be utilized by organizations and how its effectiveness can be measured.
C337.3	To know the key elements of a digital marketing strategy.
C337.4	To study how the effectiveness of a digital marketing campaign can be measured
C337.5	To demonstrate advanced practical skills in common digital marketing tools such as SEO, SEM, Social media and Blogs.

Course Name: CCS373- VISUAL EFFECTS – C408

CCS373- VISUAL EFFECTS – C408

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	3	3	3	3	1	-	-	-	1	2	1	1	3	3
C408.2	1	3	3	2	1	-	-	-	3	2	2	2	1	1
C408.3	2	3	3	2	1	-	-	-	1	2	1	2	2	2
C408.4	3	3	2	2	3	-	-	-	3	3	2	2	2	3
C408.5	1	2	1	1	2	-	-	-	1	3	2	3	2	3
C408	2	2.8	2.4	2	1.6	-	-	-	1.8	2.4	1.6	2	2	2.4

COURSE NAME: CCS373 - Visual Effects	
C338.1	To implement animation in 2D / 3D following the principles and techniques
C338.2	To use CGI, color and light elements in VFX applications
C338.3	To create special effects using any of the state of the art tools
C338.4	To apply popular visual effects techniques using advanced tools
C338.5	To use compositing tools for creating VFX for a variety of applications

Course Name: CCS347-GAME DEVELOPMENT– C423

CCS347-GAME DEVELOPMENT– C423

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C423.1	3	2	2	1	2	-	-	-	-	-	-	-	2	2
C423.2	1	2	2	1	2	-	-	-	-	-	-	-	2	2
C423.3	1	1	1	2	1	-	-	-	-	-	-	-	2	2
C423.4	3	3	1	3	3	-	-	-	-	-	-	-	2	2
C423.5	3	3	2	1	3	-	-	-	-	-	-	-	2	2
C423	2.2	2.2	1.6	1.6	2.2	-	-	-	-	-	-	-	2	2

COURSE NAME: CCS347 - Game Development	
C339.1	Explain the concepts of 2D and 3d Graphics
C339.2	Design game design documents.
C339.3	Implementation of gaming engines.
C339.4	Survey gaming environments and frameworks.
C339.5	Implement a simple game in Pygame.

Course Name: CCS353- MULTIMEDIA DATA COMPRESSION AND STORAGE– C424

CCS353- MULTIMEDIA DATA COMPRESSION AND STORAGE– C424														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C424.1	3	2	2	1	1	-	-	-	-	-	-	-	2	2
C424.2	3	2	2	1	2	-	-	-	-	-	-	-	2	2
C424.3	3	2	2	1	2	-	-	-	-	-	-	-	2	2
C424.4	3	2	2	1	1	-	-	-	-	-	-	-	2	2
C424.5	3	2	2	1	1	-	-	-	-	-	-	-	2	2
C424	3	2	2	1	1.4	-	-	-	-	-	-	-	2	2

COURSE NAME: CCS353 - Multimedia Data Compression and Storage	
C340.1	Understand the basics of text, Image and Video compression
C340.2	Understand the various compression algorithms for multimedia content
C340.3	Explore the applications of various compression techniques
C340.4	Explore knowledge on multimedia storage on disks
C340.5	Understand scheduling methods for request streams

Course Name: CCS340- CYBER SECURITY– C428

CCS340- CYBER SECURITY– C428														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C428.1	1	1	1	1	-	1	-	-	-	-	1	-	2	2
C428.2	1	3	1	3	2	1	-	-	-	-	-	-	2	2
C428.3	2	1	1	1	-	1	-	-	-	-	1	-	2	2
C428.4	3	3	2	2	2	1	-	-	-	-	-	-	2	2
C428.5	3	2	1	1	1	1	-	1	-	-	1	-	2	2
C428	2	2	1.2	1.6	1	1	0	0.2	0	0	0.6	0	2	2

COURSE NAME: CCS340 - Cyber Security	
C342.1	Explain the basics of cyber security, cyber crime and cyber law (K2)
C342.2	Classify various types of attacks and learn the tools to launch the attacks (K2)
C342.3	Apply various tools to perform information gathering (K3)
C342.4	Apply intrusion techniques to detect intrusion (K3)

Course Name: CCS359- QUANTUM COMPUTING– C409

CCS359- QUANTUM COMPUTING– C409

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	3	2	2	2	-	-	-	-	2	-	-	-	2	3
C409.2	3	2	2	2	-	-	-	-	2	-	-	-	2	3
C409.3	3	3	3	3	2	-	-	-	3	-	-	-	3	2
C409.4	3	3	3	3	3	-	-	-	3	-	-	-	1	3
C409.5	3	3	2	3	-	-	-	-	2	-	-	-	1	3
C409	3	2.6	2.4	2.6	1	-	-	-	2.4	-	-	-	1.8	2.8

COURSE NAME: CCS359 - Quantum Computing	
C343.1	Understand the basics of quantum computing.
C343.2	Understand the background of Quantum Mechanics.
C343.3	Analyze the computation models.
C343.4	Model the circuits using quantum computation environments and frameworks.
C343.5	Understand the quantum operations such as noise and error–correction.

Course Name: CCS331- 3D PRINTING AND DESIGN– C429

CCS331- 3D PRINTING AND DESIGN– C429

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C429.1	1	1	2	2	3	1	-	-	2	-	2	2	3	2
C429.2	3	2	3	3	3	2	-	-	3	-	3	2	3	2
C429.3	2	2	2	2	2	2	-	-	2	-	2	2	3	2
C429.4	2	2	2	2	3	2	-	-	2	-	2	2	3	3
C429.5	1	3	3	3	3	3	-	-	3	-	3	3	3	3
C429	1.8	2	2.4	2.4	2.8	2	-	-	2.4	-	2.4	2.2	3	2.4

COURSE NAME: CCS331 - 3D Printing and Design	
C344.1	Outline and examine the basic concepts of 3D printing technology
C344.2	Outline 3D printing workflow
C344.3	Explain and categorise the concepts and working principles of 3D printing using inkjet technique
C344.4	Explain and categorise the working principles of 3D printing using laser technique
C344.5	Explain various method for designing and modeling for industrial applications

Course Name: CCS350- KNOWLEDGE ENGINEERING C430

CCS350- KNOWLEDGE ENGINEERING C430

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C430.1	3	1	1	1	1	1	-	-	1	2	1	2	1	1
C430.2	3	2	3	2	2	-	-	-	2	1	2	1	3	3
C430.3	2	2	3	2	2	-	-	-	3	2	2	2	3	2
C430.4	2	2	3	1	1	-	-	-	2	2	2	2	2	1
C430.5	2	2	2	1	1	-	-	-	2	1	1	1	2	1
C430	2.4	1.8	2.4	1.4	1.4	0.2	0	0	2	1.6	1.6	1.6	2.2	1.6

COURSE NAME: CCS350 - Knowledge Engineering

C345.1	Understand the basics of Knowledge Engineering.
C345.2	Apply methodologies and modelling for Agent Design and Development.
C345.3	Design and develop ontologies.
C345.4	Apply reasoning with ontologies and rules.
C345.5	Understand learning and rule learning.

Course Name: CCS364- SOFT COMPUTING– C431

CCS364- SOFT COMPUTING– C431

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C431.1	3	2	3	3	3	-	-	-	3	1	3	2	3	1
C431.2	2	3	3	2	3	-	-	-	3	2	3	2	2	1
C431.3	1	3	2	2	1	-	-	-	3	1	1	2	1	3
C431.4	1	2	1	3	2	-	-	-	3	3	1	1	2	1
C431.5	2	3	1	2	1	-	-	-	3	3	3	2	1	2
C431	1.8	2.6	2	2.4	2	-	-	-	3	2	2.2	1.8	1.8	1.6

COURSE NAME: CCS364 - Soft Computing

C346.1	Understand the fundamentals of fuzzy logic operators and inference mechanisms
C346.2	Understand neural network architecture for AI applications such as classification and clustering
C346.3	Learn the functionality of Genetic Algorithms in Optimization problems
C346.4	Use hybrid techniques involving Neural networks and Fuzzy logic
C346.5	Apply soft computing techniques in real world applications

Course Name: CCS357-OPTIMIZATION TECHNIQUES– C432

CCS357-OPTIMIZATION TECHNIQUES– C432

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C432.1	3	3	2	1	1	-	-	-	2	1	1	2	3	3
C432.2	3	1	2	2	3	-	-	-	3	2	3	1	2	1
C432.3	2	3	3	2	2	-	-	-	3	3	1	3	1	3
C432.4	2	2	1	1	3	-	-	-	2	1	3	1	2	1
C432.5	2	1	1	3	2	-	-	-	3	3	1	3	3	2
C432	2.4	2	1.8	1.8	2.2	-	-	-	2.6	2	1.8	2	2.2	2

COURSE NAME: CCS357 - Optimization Techniques	
C347.1	Formulate and solve linear programming problems (LPP)
C347.2	Evaluate Integer Programming Problems, Transportation and Assignment Problems.
C347.3	Obtain a solution to network problems using CPM and PERT techniques.
C347.4	Able to optimize the function subject to the constraints.
C347.5	Identify and solve problems under Markovian queuing models

Course Name: CCS348-GAME THEORY– C433

CCS348-GAME THEORY– C433

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C433.1	3	3	2	3	3	-	-	-	-	-	-	-	1	1
C433.2	3	3	3	2	3	-	-	-	-	-	-	-	1	1
C433.3	1	1	3	3	3	-	-	-	-	-	-	-	1	1
C433.4	2	1	1	1	1	-	-	-	-	-	-	-	1	1
C433.5	2	2	3	2	1	-	-	-	-	-	-	-	1	1
C433	2.2	2	2.4	2.2	2.2	-	-	-	-	-	-	-	1	1

COURSE NAME: CCS348 - Game Theory	
C348.1	Discuss the notion of a strategic game and equilibria and identify the characteristics of main applications of these concepts.
C348.2	Discuss the use of Nash Equilibrium for other problems.
C348.3	Identify key strategic aspects and based on these be able to connect them to appropriate game theoretic concepts given a real world situation.
C348.4	Identify some applications that need aspects of Bayesian Games.
C348.5	Implement a typical Virtual Business scenario using Game theory.

Course Name: CCS337-COGNITIVE SCIENCE– C434

CCS337-COGNITIVE SCIENCE– C434														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C434.1	3	1	3	2	2	-	-	-	1	1	2	2	1	2
C434.2	2	2	1	1	2	-	-	-	3	2	3	1	2	3
C434.3	1	3	1	3	3	-	-	-	1	3	1	3	3	1
C434.4	2	1	1	2	3	-	-	-	1	2	3	1	3	3
C434.5	1	2	3	2	2	-	-	-	1	2	2	2	2	2
C434	1.8	1.8	1.8	2	2.4	-	-	-	1.4	2	2.2	1.8	2.2	2.2

COURSE NAME: CCS337 - Cognitive Science	
C349.1	Understand the underlying theory behind cognition.
C349.2	Connect to the cognition elements computationally.
C349.3	Implement mathematical functions through WebPPL.
C349.4	Develop applications using cognitive inference model.
C349.5	Develop applications using cognitive learning model.

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Course Name: HS3152 PROFESSIONAL ENGLISH I - C101

HS3152 PROFESSIONAL ENGLISH I - C101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	1	1	1	1	1	3	3	3	1	3	-	3	-	-
C301.2	1	1	1	1	1	3	3	3	1	3	-	3	-	-
C101.3	2	3	2	3	2	3	3	3	2	3	3	3	-	-
C101.4	2	3	2	3	2	3	3	3	2	3	3	3	-	-
C101.5	2	3	3	3	-	3	3	3	2	3	-	3	-	-
C101	1.6	2.2	1.8	2.2	1.5	3	3	3	1.6	3	3	3	-	-

COURSE NAME: HS3152 - Professional English – I	
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

Course Name: MA3151 MATRICES AND CALCULUS C102

MA3151 MATRICES AND CALCULUS C102	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.2	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.3	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.4	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102.5	3	3	1	1	0	0	0	0	2	0	2	3	-	-
C102	3	3	1	1	0	0	0	0	2	0	2	3	-	-

COURSE NAME: MA3151- Matrices and Calculus	
C102.1	Use the matrix algebra methods for solving practical problems
C102.2	Apply differential calculus tools in solving various application problems
C102.3	Able to use differential calculus ideas on several variable functions
C102.4	Apply different methods of integration in solving practical problems
C102.5	Apply multiple integral ideas in solving areas, volumes and other practical problems

Course Name: PH3151 ENGINEERING PHYSICS - C103

PH3151 ENGINEERING PHYSICS - C103														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	3	2	1	1	1	-	-	-	-	-	-	-	-
C103.2	3	3	2	1	2	1	-	-	-	-	-	-	-	-
C103.3	3	3	2	2	2	1	-	-	-	-	-	-	-	2
C103.4	3	3	1	1	2	1	-	-	-	-	-	-	-	-
C103.5	3	3	1	1	2	1	-	-	-	-	-	-	-	-
C103	3	3	1.6	1.2	1.8	1	-	-	-	-	-	1	-	-

COURSE NAME: PH3151- Engineering Physics	
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 Name: CY3151 ENGINEERING CHEMISTRY - C104

CY3151 ENGINEERING CHEMISTRY - C104														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	2	2	1	-	1	1	-	-	-	-	1	-	-
C104.2	2	-	-	1	-	2	2	-	-	-	-	-	-	-
C104.3	3	1	-	-	-	-	-	-	-	-	-	-	-	-
C104.4	3	1	1	-	-	1	2	-	-	-	-	-	-	-
C104.5	3	1	2	1	-	2	2	-	-	-	-	2	-	-
C104	2.8	1.3	1.6	1	-	1.5	1.8	-		-	-	1.5	-	-

COURSE NAME: CY3151- Engineering Chemistry	
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 nanoscience and nanotechnology in designing the synthesis of nanomaterials 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 Name: GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING - C105

GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING - C105														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	3	3	3	2	-	-	-	-	-	2	2	3	3
C105.2	3	3	3	3	2	-	-	-	-	-	2	2	3	-
C105.3	3	3	3	3	2	-	-	-	-	-	2	-	3	-
C105.4	2	2	-	2	2	-	-	-	-	-	1	-	3	-
C105.5	1	2	-	-	1	-	-	-	-	-	1	-	2	-
C105.6	2	2	-	-	2	-	-	-	-	-	1	-	2	-
C105	2	3	3	3	2	-	-	-	-	-	2	2	3	3

COURSE NAME: GE3151- Problem Solving and Python Programming	
C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Develop and execute simple Python programs
C105.3	Write simple Python programs using conditionals and loops for solving problems
C105.4	Decompose a Python program into functions
C105.5	Represent compound data using Python lists, tuples, dictionaries etc.
C105.6	Read and write data from/to files in Python programs.

Course Name: GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY   - C106

GE3171 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY - C106														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	3	3	3	2	-	-	-	-	-	2	2	3	3
C106.2	3	3	3	3	2	-	-	-	-	-	2	2	3	-
C106.3	3	3	3	3	2	-	-	-	-	-	2	-	3	-
C106.4	2	2	-	2	2	-	-	-	-	-	1	-	3	-
C106.5	1	2	-	-	1	-	-	-	-	-	1	-	2	-
C106.6	2	2	-	-	2	-	-	-	-	-	1	-	2	-
C106	2	3	3	3	2	-	-	-	-	-	2	2	3	3

COURSE NAME: GE3171 - Problem Solving and Python Programming Laboratory	
C106.1	Develop algorithmic solutions to simple computational problems
C106.2	Develop and execute simple Python programs
C106.3	Implement programs in Python using conditionals and loops for solving problems
C106.4	Deploy functions to decompose a Python program
C106.5	Process compound data using Python data structures
C106.6	Utilize Python packages in developing software applications

Course Name: BS3171 PHYSICS AND CHEMISTRY LABORATORY- C107

BS3171 PHYSICS AND CHEMISTRY LABORATORY- C107														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	2	3	1	1	-	-	-	-	-	-	-	-	-
C107.2	3	3	2	1	1	-	-	-	-	-	-	-	-	-
C107.3	3	2	3	1	1	-	-	-	-	-	-	-	-	-
C107.4	3	3	2	1	1	-	-	-	-	-	-	-	-	-
C107.5	3	2	3	1	1	-	-	-	-	-	-	-	-	-
C107	3	2.4	2.6	1	1	-	-	-	-	-	-	-	-	-

COURSE NAME: BS3171- Physics and Chemistry Laboratory	
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 Name: GE3172 ENGLISH LABORATORY - C109

GE3172 ENGLISH LABORATORY - C109														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.2	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.3	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.4	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108.5	3	3	3	3	1	3	3	3	3	3	3	3	-	-
C108	3	3	3	3	1	3	3	3	3	3	3	3	-	-

COURSE NAME: GE3172- English Laboratory	
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 Name: HS3252 Professional English - II C110

HS3252 Professional English - II C110													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	3	3	3	3	3	3	3	3	2	3	3	3	-	-
C109.2	3	3	3	3	3	3	3	3	2	3	3	3	-	-
C109.3	3	3	3	3	3	3	3	3	2	3	3	3	-	-
C109.4	3	3	3	3	2	3	3	3	2	3	3	3	-	-
C109.5	-	-	-	-	-	-	-	-	3	3	3	3	-	-
C109	3	3	3	3	2.75	3	3	3	2.2	3	3	3	-	-

COURSE NAME: HS3252- Professional English - II	
C110.1	To compare and contrast products and ideas in technical texts
C110.2	To identify and report cause and effects in events, industrial processes through technical texts
C110.3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format
C110.4	To present their ideas and opinions in a planned and logical manner
C110.5	To draft effective resumes in the context of job search

Course Name: MA3251 STATISTICS AND NUMERICAL METHODS - C112

MA3251 STATISTICS AND NUMERICAL METHODS - C112													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.2	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.3	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.4	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110.5	3	3	1	1	1	0	0	0	2	0	2	3	-	-
C110	3	3	1	1	1	0	0	0	2	0	2	3	-	-

COURSE NAME: MA3251- Statistics and Numerical Methods	
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 second order ordinary differential equations
C111.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications

Course Name: PH3256 PHYSICS FOR INFORMATION SCIENCE C113

PH3256 PHYSICS FOR INFORMATION SCIENCE C113														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	2	2	-	3	-	-	-	2	2	-	1	-	2
C111.2	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C111.3	3	3	3	-	3	-	-	-	2	2	-	-	-	-
C111.4	3	-	-	-	-	-	-	-	-	2	-	-	-	-
C111.5	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C111	3	2.8	2.8	-	3	-	-	-	2	2	-	1.7	2	2

COURSE NAME: PH3256- Physics for Information Science	
C112.1	gain knowledge on classical and quantum electron theories, and energy band structures
C112.2	acquire knowledge on basics of semiconductor physics and its applications in various devices
C112.3	get knowledge on magnetic properties of materials and their applications in data storage
C112.4	have the necessary understanding on the functioning of optical materials for optoelectronics
C112.5	understand the basics of quantum structures and their applications and basics of quantum computing

Course Name: BE3251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING - C116

BE3251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING - C116														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112.2	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112.3	2	1	1	-	-	-	-	1	-	-	-	2	-	-
C112.4	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112.5	2	2	1	-	-	-	-	1	-	-	-	2	-	-
C112	2	1.8	1	-	-	-	-	1	-	-	-	2	-	-

COURSE NAME: BE3251- Basic Electrical and Electronics Engineering	
C113.1	Compute the electric circuit parameters for simple problems
C113.2	Explain the working principle and applications of electrical machines
C113.3	Analyze the characteristics of analog electronic devices
C113.4	Explain the basic concepts of digital electronics
C113.5	Explain the operating principles of measuring instruments

Course Name: GE3251 ENGINEERING GRAPHICS - C117

GE3251 ENGINEERING GRAPHICS - C117

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.2	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.3	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.4	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113.5	3	1	2	-	2	-	-	-	-	3	-	2	2	2
C113	3	1	2	-	2	-	-	-	-	3	-	2	2	2

COURSE NAME: GE3251- Engineering Graphics	
C114.1	Use BIS conventions and specifications for engineering drawing.
C114.2	Construct the conic curves, involutes and cycloid.
C114.3	Solve practical problems involving projection of lines
C114.4	Draw the orthographic, isometric and perspective projections of simple solids
C114.5	Draw the development of simple solids

Course Name: CS3251 – PROGRAMMING IN C - C201

CS3251 – PROGRAMMING IN C - C201

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	1	2	2	1	2	1	1	1	2	-	3	2	1	2
C114.2	2	2	2	1	2	1	1	1	2	-	3	3	2	2
C114.3	2	3	2	1	2	1	1	1	2	-	3	2	2	2
C114.4	3	2	2	1	3	1	1	1	2	-	3	3	2	2
C114.5	2	3	3	1	2	1	2	1	2	-	3	2	2	3
C114	2	2	2	1	2	1	1	1	2	-	3	2	2	2

COURSE NAME: CS3251- Programming in C	
C115.1	Demonstrate knowledge on C Programming constructs
C115.2	Develop simple applications in C using basic constructs
C115.3	Design and implement applications using arrays and strings
C115.4	Develop and implement modular applications in C using functions
C115.5	Develop applications in C using structures and pointers
C115.6	Design applications using sequential and random access file processing.

Course Name: GE3271 – ENGINEERING PRACTICES LABORATORY - C202

GE3271 – ENGINEERING PRACTICES LABORATORY - C202

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	3	2	-	-	1	1	1	-	-	-	-	2	2	1
C115.2	3	2	-	-	1	1	1	-	-	-	-	2	2	1
C115.3	3	2	-	-	1	1	1	-	-	-	-	2	2	1
C115	3	2	-	-	1	1	1	-	-	-	-	2	2	1

COURSE NAME: GE3271-Engineering Practices Laboratory

C116.1	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
C116.2	Wire various electrical joints in common household electrical wire work.
C116.3	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.
C116.4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Course Name: CS3271 – PROGRAMMING IN C LABORATORYS - C203

CS3271 – PROGRAMMING IN C LABORATORYS - C203

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	1	3	3	1	1	1	-	-	2	1	2	2	2	2
C116.2	2	3	3	2	1	1	-	-	2	1	2	2	2	3
C116.3	2	2	2	1	1	2	-	-	2	-	2	2	2	2
C116.4	2	2	2	2	1	2	-	-	3	-	3	3	3	2
C116.5	2	2	3	2	3	2	-	-	3	-	3	3	3	3
C116	2	2	3	2	1	2	-	-	2	1	2	2	2	2

COURSE NAME: CS3271- Programming in C Laboratory

C117.1	Demonstrate knowledge on C programming constructs
C117.2	Develop programs in C using basic constructs
C117.3	Develop programs in C using arrays
C117.4	Develop applications in C using strings, pointers, functions
C117.5	Develop applications in C using structures
C117.6	Develop applications in C using file processing

Course Name: GE3272 – COMMUNICATION LABORATORY - C204

GE3272 – COMMUNICATION LABORATORY - C204

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C117.1	2	3	3	3	1	3	3	3	3	3	3	3	-	-
C117.2	2	3	3	3	1	3	3	3	3	3	3	3	-	-
C117.3	2	2	3	3	1	3	3	3	3	3	3	3	-	-
C117.4	3	3	3	3	3	3	3	3	3	3	3	3	-	-
C204.5	3	3	3	3	3	3	3	3	3	3	3	3	-	-
C204	2.4	2.8	3	3	1.8	3	3	3	3	3	3	3	-	-

COURSE NAME: GE3272- Communication Laboratory / Foreign Language	
C118.1	Speak effectively in group discussions held in a formal/semi formal contexts
C118.2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
C118.3	Write emails, letters and effective job applications
C118.4	Write critical reports to convey data and information with clarity and precision
C118.5	Give appropriate instructions and recommendations for safe execution of tasks

SEMESTER - III

Course Name: MA3354 –DISCRETE MATHEMATICS - C205

MA3354 –DISCRETE MATHEMATICS - C205

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	3	2	-	-	-	-	-	-	-	-	2	-	-
C205.2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C205.3	-	3	2	-	-	2	-	-	-	3	-	-	-	-
C205.4	-	2	2	2	-	-	-	-	-	-	-	-	-	-
C205.5	-	2	2	2	-	-	-	-	-	2	-	-	-	-
C205	1	3	2	1	-	-	-	-	-	1	-	-	-	-

COURSE NAME: MA3354- Discrete Mathematics	
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 Name: CS3351– DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION - C206

CS3351– DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION - C206														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	3	3	3	2	1	1	1	1	2	3	2	3
C206.2	3	3	3	3	2	1	1	1	1	1	2	3	1	2
C206.3	3	3	3	3	2	2	1	1	1	1	2	3	2	3
C206.4	3	3	3	3	1	1	1	1	1	1	1	2	1	3
C206.5	3	3	3	3	1	2	1	1	1	1	1	2	1	2
C206	3	3	3	3	1	2	1	1	1	1	1	2	1	2

COURSE NAME:-CS3351 - Digital Principles and Computer Organization	
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 Name: FOUNDATIONS OF DATA SCIENCE - C207

CS3352 – FOUNDATIONS OF DATA SCIENCE - C207														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	2	2	1	2	2	-	-	-	1	1	1	2	2	2
C207.2	2	1	-	1	1	-	-	-	2	1	1	2	2	3
C207.3	2	2	1	2	2	1	1	-	1	2	1	3	2	2
C207.4	3	2	2	1	2	-	-	-	1	1	2	2	3	3
C207.5	2	2	1	2	2	-	-	-	1	1	1	2	2	2
C207	2	2	1	2	2	1	1	-	1	1	1	2	2	2

COURSE NAME: CS3352 - Foundations of Data Science	
C203.1	Define the data science process
C203.2	Understand different types of data description for data science process
C203.3	Gain knowledge on relationships between data
C203.4	Use the Python Libraries for Data Wrangling
C203.5	Apply visualization Libraries in Python to interpret and explore data

Course Name: CD3291 – DATA STRUCTURES AND ALGORITHMS - C208

CD3291 – DATA STRUCTURES AND ALGORITHMS - C208														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	1	2	2	3	1	-	-	-	2	-	2	1	1	1
C208.2	2	3	2	2	2	-	-	-	2	-	2	2	3	2
C208.3	2	2	3	2	3	-	-	-	3	-	2	2	3	2
C208.4	3	3	3	3	1	-	-	-	3	-	2	2	3	2
C208.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C208	2	3	3	3	2	-	-	-	3	-	2	2	3	2

COURSE NAME: CS3301 - Data Structures	
C204.1	Explain abstract data types
C204.2	Design,implement,andanalyzelineardatastructures,suchaslists,queues,andstacks, according to the needs of different applications
C204.3	Design,implement,and analyze efficient tree structures to meet requirements suchas searching, indexing, and sorting
C204.4	Model problems as graph problems and implement efficient graph algorithms to solve them

Course Name: CS3391 – OBJECT ORIENTED PROGRAMMING - C209

CS3391 – OBJECT ORIENTED PROGRAMMING - C209														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	1	1	3	1	3	-	-	-	3	2	2	2	3	1
C209.2	2	1	3	2	1	-	-	-	2	1	1	3	3	3
C209.3	3	3	1	2	2	-	-	-	3	2	1	2	3	1
C209.4	3	1	2	2	2	-	-	-	1	2	1	3	3	1
C209.5	1	1	2	3	2	-	-	-	3	2	1	2	3	3
C209	2	1	2	2	2	-	-	-	2	2	1	2	3	2

COURSE NAME: CS3391- Object Oriented Programming	
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 Name: CD3281 – DATA STRUCTURES AND ALGORITHMS LABORATORY - C210

CD3281 – DATA STRUCTURES LABORATORY AND ALGORITHMS LABORATORY - C210														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	2	1	1	1	-	-	-	2	3	1	2	1	2
C210.2	3	3	2	-	1	-	-	-	2	3	1	2	2	2
C210.3	2	2	2	1	1	-	-	-	2	3	1	2	1	3
C210.4	3	1	2	1	1	-	-	-	2	3	1	2	1	3
C210	2.75	2	1.75	1	1	-	-	-	2	3	1	2	1.25	2.5

COURSE NAME: CD3281- Data Structures and Algorithms Laboratory	
C206.1	ImplementADTsasPythonclasses
C206.2	Design,implement,andanalyselineardatastructures,suchaslists,queues,andstacks, according to the needs of different applications
C206.3	Design,implement,and analyse efficient tree structures to meet requirements suchas searching, indexing, and sorting
C206.4	Model problems as graph problems and implement efficient graph algorithms to solve them

Course Name: CS3381 – OBJECT ORIENTED PROGRAMMING LABORATORY C211

CS3381 – OBJECT ORIENTED PROGRAMMING LABORATORY C211														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	2	1	2	1	-	-	-	-	1	2	2	2	1	2
C211.2	2	1	3	1	-	-	-	-	2	3	3	2	1	3
C211.3	2	2	1	2	1	-	-	-	1	2	1	3	2	3
C211.4	2	2	1	3	-	-	-	-	3	1	1	1	2	1
C211.5	1	3	3	1	3	-	-	-	1	1	1	1	2	1
C211	2	2	2	2	2	-	-	-	2	2	2	2	2	2

COURSE NAME: CS3381- Object Oriented Programming Laboratory	
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 Name: CS3361 – DATA SCIENCE LABORATORY - C212

CS3361 – DATA SCIENCE LABORATORY - C212														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	1	1	-	-	-	-	1	3	3	3	1	3
C212.2	3	2	2	3	1	-	-	-	3	1	3	2	1	3

C212.3	3	2	1	3	1	-	-	-	2	1	1	1	3	2
C212.4	2	3	1	3	-	-	-	-	2	3	2	3	3	3
C212.5	1	2	3	1	1	-	-	-	2	1	3	1	1	3
C212	2	2	2	2	1	-	-	-	2	2	2	2	2	3

COURSE NAME: CS3361 – Data Science Laboratory	
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 Name: GE3361 – PROFESSIONAL DEVELOPMENT - C212

GE3361 – PROFESSIONAL DEVELOPMENT - C212														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	1	1	-	-	-	-	1	3	3	3	1	3
C212.2	3	2	2	3	1	-	-	-	3	1	3	2	1	3
C212.3	3	2	1	3	1	-	-	-	2	1	1	1	3	2
C212	3	2	1.3	2.3	1	-	-	-	2	1.6	2.3	2	1.6	2.6

COURSE NAME: GE3361- Professional Development	
C209.1	Use MS Word to create quality documents, by structuring and organizing content for their dayto day technical and academic requirements
C209.2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding
C209.3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.