CS 111 (R22): MATHEMATICS-I

COURSE OUTCOMES:

CO1	**Using Matrix method find the inverse of matrix, and using other methods solving Homogeneous and non-homogeneous equations. Determining the eigen values and eigen vectors.**
CO2	**Finding the approximate real root of given equation**
CO3	**Finding partial derivatives of first and higher orders and maxima and minima of functions of two variables**
CO4	**Evaluate double integrals techniques over a region of two dimensional and with polar coordinates**
CO5	**Familiarize with special functions to evaluate some proper and improper integrals using beta and gamma functions**

CS 112 (R22): ENGINEERING PHYSICS

COURSE OUTCOMES:

CO1	**Distinguish the phenomena of light-Interference, diffraction, and determination of the wavelength of given light using these phenomena.**
CO2	**Apply the concepts of light in optical fiber and lasers in communication system. Use of fibers In communication system. Major applications of fibers and Lasers in medical field.**
CO3	**Classify the magnetic materials and apply the magnetic, dielectric materials for given engineering applications.**
CO4	**Classify the semiconductors and study the properties of Semiconductors. Hall effect.**
CO5	**Calculate the energy of quantum particle at different energy levels, de Broglie's hypothesis, Schrodinger's wave function and its applications, study of the properties of superconductors. BCS Theory of Superconductivity.**

CS 113 (R22): BASIC ELECTRICAL ENGINEERING

COURSE OUTCOMES:

CO1	**Understand the fundamental concepts of DC and AC circuits, including Kirchhoff's laws, series and parallel connections, and nodal and loop analysis.**
CO2	**Analyze single-phase AC circuits consisting of RL, RC, and RLC series circuits, including series resonance and band width.**
CO3	**Demonstrate knowledge of magnetic circuits and their properties, including Faraday's laws of electromagnetic induction, dynamically and statically induced EMF, and self and mutual inductance.**
CO4	**Explain the principle and working of transistors, JFET, UJT, SCR and their Applications.**
CO5	**Describe the principle, operation, and construction of FET, JFET, MOSFET, FET biasing, MOSFET biasing. Understand the fundamental concepts operational amplifires.**

CS 114 (R22): ENGINEERING GRAPHICS

COURSE OUTCOMES:

CO1	To understand how to construct and analyze different types of curves used in engineering design and manufacturing to study conic sections, cycloids, helixes, spirals, and involutes.
CO2	To analyze their drawing skills through regular practice of the different techniques taught in the course, including freehand sketching, orthographic and isometric projections.
CO3	Applying of their drawing skills through regular practice of the different techniques taught in the course, including orthographic projections, section views, and dimensioning.
CO4	To understand various topics such as projections of lines in different planes, true length and true inclination of lines, and projection of planes in different planes, true shape and true size of planes, and the concept of auxiliary planes.
CO5	To evaluate various topics such as sectioning of solids, different types of sections, and the application of sectioning in engineering design and manufacturing. Understand and learn how to use computer-aided design software to create 2D models of solid objects with sections.

CS 115 (R22): PROBLEM SOLVING AND PROGRAMMING WITH C

COURSE OUTCOMES:

CO1	Design and develop flowcharts using Raptor to solve simple problems related to basic programming constructs.
CO2	Write basic programs in C using different data types, operators, and control Structures.
CO3	Develop programs using functions and understand concepts like scope, storage classes, and recursion.
CO4	Implement programs using arrays, pointers, and strings for solving problems related to data manipulation.
CO5	Understand the concept of structures and files in C programming, and develop programs using structures and file handling functions.

CS 151 (R22): BASIC ELECTRICAL ENGINEERING LABORATORY

COURSE OUTCOMES:

CO1	Understand basic safety precautions and be able to use measuring instruments such as voltmeter, ammeter, multi-meter, and oscilloscope.
CO2	Verify Kirchhoff's laws by performing experiments on electrical circuits
CO3	Verify the Superposition theorem by performing experiments on electrical circuits
CO4	Verify Thevenin's theorem by performing experiments on electrical circuits
CO5	Understand the open circuit characteristics of a DC shunt generator and be able to perform experiments to determine its behavior

CS 152 (R22): ENGINEERING PHYSICS LABORATORY

COURSE OUTCOMES:

CO1	Examine the physical properties of light using interference and diffraction.
CO2	Calculate the numerical aperture and acceptance angle of optical fiber
CO3	Analyze the characteristics of semiconducting material
CO4	Demonstrate the magnetizing behavior of magnetic materials
CO5	Calculate the dielectric constant of a materia

CS 153 (R22): COMPUTER PROGRAMMING USING C LAB

COURSE OUTCOMES:

CO1	Understand and apply fundamental programming concepts such as variables, data types, operators, control structures, functions, arrays, pointers, and structures in C language.
CO2	Develop efficient algorithms and use appropriate data structures to solve programming problems in C
CO3	Demonstrate the ability to write and debug C programs using appropriate tools and techniques, including integrated development environments (IDEs) and debugging utilities
CO4	Evaluate the efficiency and complexity of C programs in terms of time and space complexity, and apply appropriate techniques to optimize program performance.
CO5	Work collaboratively in teams to develop complex C programs, and effectively communicate technical information and programming solutions to others

AM 111 (R22): MATHEMATICS-I

COURSE OUTCOMES:

CO1	Using Matrix method find the inverse of matrix, and using other methods solving Homogeneous and non-homogeneous equations. Determining the eigen values and eigen vectors.
CO2	Finding the approximate real root of given equation
CO3	Finding partial derivatives of first and higher orders and maxima and minima of functions of two variables
CO4	Evaluate double integrals techniques over a region of two dimensional and with polar coordinates
CO5	Familiarize with special functions to evaluate some proper and improper integrals using beta and gamma functions

AM 112 (R22): ENGINEERING PHYSICS

COURSE OUTCOMES:

CO1	Distinguish the phenomena of light-Interference, diffraction, and determination of the wavelength of given light using these phenomena.
CO2	Apply the concepts of light in optical fiber and lasers in communication system. Use of fibers In communication system. Major applications of fibers and Lasers in medical field.

CO3	Classify the magnetic materials and apply the magnetic, dielectric materials for given engineering applications.
CO4	Classify the semiconductors and study the properties of Semiconductors. Hall effect.
CO5	Calculate the energy of quantum particle at different energy levels, de Broglie's hypothesis, Schrodinger's wave function and its applications, study of the properties of superconductors. BCS Theory of Superconductivity.

AM 113 (R22): BASIC ELECTRICAL ENGINEERING

COURSE OUTCOMES:

CO1	Understand the fundamental concepts of DC and AC circuits, including Kirchhoff's laws, series and parallel connections, and nodal and loop analysis.
CO2	Analyze single-phase AC circuits consisting of RL, RC, and RLC series circuits, including series resonance and band width.
CO3	Demonstrate knowledge of magnetic circuits and their properties, including Faraday's laws of electromagnetic induction, dynamically and statically induced EMF, and self and mutual inductance.
CO4	Explain the principle and working of transistors, JFET, UJT, SCR and their Applications.
CO5	Describe the principle, operation, and construction of FET, JFET, MOSFET, FET biasing, MOSFET biasing. Understand the fundamental concepts operational amplifires.

AM 114 (R22): ENGINEERING GRAPHICS

COURSE OUTCOMES:

CO1	To understand how to construct and analyze different types of curves used in engineering design and manufacturing to study conic sections, cycloids, helixes, spirals, and involutes.
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CO3	Applying of their drawing skills through regular practice of the different techniques taught in the course, including orthographic projections, section views, and dimensioning.
CO4	To understand various topics such as projections of lines in different planes, true length and true inclination of lines, and projection of planes in different planes, true shape and true size of planes, and the concept of auxiliary planes.
CO5	To evaluate various topics such as sectioning of solids, different types of sections, and the application of sectioning in engineering design and manufacturing. Understand and learn how to use computer-aided design software to create 2D models of solid objects with sections.

AM 115 (R22): PROBLEM SOLVING AND PROGRAMMING WITH C

COURSE OUTCOMES:

CO1	Design and develop flowcharts using Raptor to solve simple problems related to basic programming constructs.
CO2	Write basic programs in C using different data types, operators, and control Structures.

CO3	Develop programs using functions and understand concepts like scope, storage classes, and recursion.
CO4	Implement programs using arrays, pointers, and strings for solving problems related to data manipulation.
CO5	Understand the concept of structures and files in C programming, and develop programs using structures and file handling functions.

AM 151 (R22): BASIC ELECTRICAL ENGINEERING LABORATORY

COURSE OUTCOMES:

CO1	Understand basic safety precautions and be able to use measuring instruments such as voltmeter, ammeter, multi-meter, and oscilloscope.
CO2	Verify Kirchhoff's laws by performing experiments on electrical circuits
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CO4	Verify Thevenin's theorem by performing experiments on electrical circuits
CO5	Understand the open circuit characteristics of a DC shunt generator and be able to perform experiments to determine its behavior

AM 152 (R22): ENGINEERING PHYSICS LABORATORY

COURSE OUTCOMES:

CO1	Examine the physical properties of light using interference and diffraction.
CO2	Calculate the numerical aperture and acceptance angle of optical fiber
CO3	Analyze the characteristics of semiconducting material
CO4	Demonstrate the magnetizing behavior of magnetic materials
CO5	Calculate the dielectric constant of a materia

AM 153 (R22): COMPUTER PROGRAMMING USING C LAB

COURSE OUTCOMES:

CO1	Understand and apply fundamental programming concepts such as variables, data types, operators, control structures, functions, arrays, pointers, and structures in C language.
CO2	Develop efficient algorithms and use appropriate data structures to solve programming problems in C
CO3	Demonstrate the ability to write and debug C programs using appropriate tools and techniques, including integrated development environments (IDEs) and debugging utilities
CO4	Evaluate the efficiency and complexity of C programs in terms of time and space complexity, and apply appropriate techniques to optimize program performance.
CO5	Work collaboratively in teams to develop complex C programs, and effectively communicate technical information and programming solutions to others

EC 111 (R22): MATHEMATICS-I

COURSE OUTCOMES:

CO1	Using Matrix method find the inverse of matrix, and using other methods solving Homogeneous and non-homogeneous equations. Determining the eigen values and eigen vectors.
CO2	Finding the approximate real root of given equation
CO3	Finding partial derivatives of first and higher orders and maxima and minima of functions of two variables
CO4	Evaluate double integrals techniques over a region of two dimensional and with polar coordinates
CO5	Familiarize with special functions to evaluate some proper and improper integrals using beta and gamma functions

EC 112 (R22): ENGINEERING CHEMISTRY

COURSE OUTCOMES:

CO1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
CO2	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution. Design economically and new methods of synthesis nano materials
CO3	Identify electronic components that can provide protection and specify a minimum set of protections needed - Compute stored energy in a battery pack - List the manufacturing steps of different types of lithium-ion cells and possible failure modes and apply their knowledge for protection of different metals from corrosion
CO4	Ability to understand, explain and select instrumental techniques for analysis
CO5	Develop the technique involved in the manufacturing process of cement Apply the knowledge about the properties of chemical fuels for the generation of power Apply the knowledge of various polymeric material, their synthesis and applications and synthesize medicinal compounds and the physical chemical properties of drugs using drug design software

EC 113 (R22): PROFESSIONAL COMMUNICATION SKILLS

COURSE OUTCOMES:

CO1	Identify the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English (L3)
CO2	Formulate sentences using proper grammatical structures and correct word forms (L3)
CO3	Speak clearly on a specific topic using suitable discourse markers in informal discussions
CO4	Write summaries based on global comprehension of reading texts (L3)
CO5	Produce a coherent paragraph interpreting a figure/graph/chart/table (L4)

EC 114 (R22): ELECTRICAL CIRCUIT ANALYSIS

COURSE OUTCOMES:

CO1	Analyze electrical circuits using Kirchhoff's laws, series and parallel connections of resistances, and nodal and loop analysis techniques.
CO2	Apply various network theorems such as superposition theorem, Thevenin's theorem,
CO3	Norton's theorem, maximum power transfer theorem, reciprocity theorem, and compensation theorem to simplify circuit analysis.
CO4	Understand the concept of duality and its application in analyzing electrical networks.
CO5	Analyze AC circuits in sinusoidal steady state using phasor diagrams, impedance, admittance, and effective or RMS values.
CO6	Solve first and second-order differential equations for R-L, R-C, and R-L-C circuits, and determine the steady-state and transient responses of the circuits.

EC 115 (R22): PROBLEM SOLVING AND PROGRAMMING WITH C

COURSE OUTCOMES:

CO1	Design and develop flowcharts using Raptor to solve simple problems related to basic programming constructs.
CO2	Write basic programs in C using different data types, operators, and control Structures.
CO3	Develop programs using functions and understand concepts like scope, storage classes, and recursion.
CO4	Implement programs using arrays, pointers, and strings for solving problems related to data manipulation.
CO5	Understand the concept of structures and files in C programming, and develop programs using structures and file handling functions.

EC 116 (R22): ENVIRONMENTAL SCIENCE

COURSE OUTCOMES:

CO1	Gain knowledge about environment and importance of Environmental Studies in the life. They have to know about resources, its importance and environmental impacts of human activities on natural resources.
CO2	Students will learn about the Ecosystem functioning and Importance of biodiversity and its Conservation.
CO3	Gain knowledge about the environmental pollution control, management of waste and pollution related aspects.
CO4	Aware students about social issues and natural calamities, constitutional tools provisions for human welfare.
CO5	Students will learn about increase in population growth and its impact on environment and study of different ecosystems through field visit.

EC 151 (R22): ENGINEERING CHEMISTRY LABORATORY

COURSE OUTCOMES:

CO1	Explain various methods of volumetric analysis i.e. Redox, Iodometric, complexometric, Neutralization etc. and use of conductivity meter for measurement of conductance of water sample.
CO2	Apply the use of internal and external indicators and their comparison for redox titrations and mechanisms of iodometric titrations and use of double indicator method in a single titration
CO3	Estimate the % values of moisture, volatile matter, ash and carbon of fuel by Proximate analysis and instrument handling.
CO4	Analyse the properties of lubricants viz. Flash & fire point, viscosity, cloud & pour point and their significance
CO5	Produce a coherent paragraph interpreting a figure/graph/chart/table (L4) Explain synthetic technique of drug like Aspirin, Paracetamol etc

EC 152 (R22): COMMUNICATION SKILLS LAB

COURSE OUTCOMES:

CO1	Identify the sounds of English and use of stress and intonation in connected speech.
CO2	Able to listen carefully to communicate effectively in cross- cultural contexts.
CO3	Capable to make the students communicate in Daily life situations.
CO4	Capable to read for content/ main idea.
CO5	Able to communicate confidently in oral presentations

EC 153 (R22): COMPUTER PROGRAMMING USING C LAB

COURSE OUTCOMES:

CO1	Understand and apply fundamental programming concepts such as variables, data types, operators, control structures, functions, arrays, pointers, and structures in C language.
CO2	Develop efficient algorithms and use appropriate data structures to solve programming problems in C
CO3	Demonstrate the ability to write and debug C programs using appropriate tools and techniques, including integrated development environments (IDEs) and debugging utilities
CO4	Evaluate the efficiency and complexity of C programs in terms of time and space complexity, and apply appropriate techniques to optimize program performance.
CO5	Work collaboratively in teams to develop complex C programs, and effectively communicate technical information and programming solutions to others.