SAIRAM
COLLEGE OF ENGINEERING
Anekal, Bengaluru

DEPARTMENT OF SCIENCE & HUMANITIES 2021 SCHEME CO's

Course Code	Course Name	CO Code	CO
21PHY12/22	Engineering Physics	CO1	Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields.
		CO2	Demonstrate the quantisation of energy for microscopic system.
		CO3	Apply LASER and Optical fibers in opto electronic system.
		CO4	Illustrate merits of quantum free electron theory and applications of Hall effect.
		CO5	Analyse the importance of XRD and Electron Microscopy in Nano material characterization.
21CHE12/22	Engineering Chemistry	CO1	Discuss the electrochemical energy systems such as electrodes and batteries
		CO2	Explain the fundamental concepts of corrosion, its control and surface modification methods namely electroplating and electroless plating
		CO3	Enumerate the importance, synthesis and applications of polymers. Understand properties and application of nanomaterials.
		CO4	Describe the principles of green chemistry, understand properties and application alternative fuels.
		CO5	Illustrate the fundamental principles of water chemistry, applications of volumetric and analytical instrumentation.
21ELE13/23	Basic Electrical Engineering	CO1	Analyse basic DC and AC electric circuits.
		CO2	Explain the working principles of transformers and electrical machines.
		CO3	Explain the concepts of electric power transmission and distribution of power.
		CO4	Understand the wiring methods, electricity billing
		CO5	working principles of circuit protective devices and personal safety measures.
21CIV14/24	Elements of Civil Engineering and Mechanics	CO1	Understand the various fields of civil engineering.
		CO2	Compute the resultant of a force system and resolution of a force.
		CO3	Comprehend the action for forces, moments, and other types of loads on rigid bodies and compute the reactive forces.
		CO4	Locate the centroid and compute the moment of inertia of regular and built-up sections.
		CO5	Analyze the bodies in motion.
21MAT11	Calculus and Differential Equation	CO1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
		CO2	Learn the notion of partial differentiation to calculate rate of change of multivariate functions
		CO3	Solve first-order linear/nonlinear ordinary differential equations analytically using standard methods.
		CO4	Demonstrate various models through higher order differential equations and solve such linear ordinary differential equations.

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		CO5	Test the consistency of a system of linear equations and to solve them by direct and iterative methods.
21EVN15/25	Engineering Visualization	CO1	Understand and visualize the objects with definite shape and dimensions
		CO2	Analyze the shape and size of objects through different views
		CO3	Develop the lateral surfaces of the object
		CO4	Create a 3D view using CAD software.
		CO5	Identify the interdisciplinary engineering components or systems through its graphical representation.
21PHYL16/26	Engineering Physics Lab	CO1	Understand the measuring techniques
		CO2	Operate different instruments and be capable to analyse the experimental results.
		CO3	Construct the circuits and their analysis
		CO4	Construct and analyse the electronic circuits.
		CO5	Estimate the error in measurements and the ability to prepare a valid laboratory record.
21ELE17/27	Basic Electrical Engineering Lab	CO1	Verify KCLand KVL and maximum power transfer theorem for DC circuits.
		CO2	Compare power factors of different types of lamps.
		CO3	Demonstrate the measurement of the impedance of an electrical circuit and power consumed by a 3-phase load
		CO4	Analyze two-way and three-way control of lamps.
		CO5	Explain the effects of open and short circuits in simple circuits.
21EGH18	Communicative English	CO1	Understand and apply the Fundamentals of Communication Skills in their communication skills
		CO2	Identify the nuances of phonetics, intonation and enhance pronunciation skills.
		CO3	To impart basic English grammar and essentials of language skills as per present requirement.
		CO4	Understand and use all types of English vocabulary and language proficiency.
		CO5	Adopt theTechniques of Information Transfer through presentation.
21IDT19	Innovation and Design thinking	CO1	Appreciate various design process procedure
		CO2	Generate and develop design ideas through different technique
		CO3	Identify the significance of reverse Engineering to Understand products
		CO4	Draw technical drawing for design ideas

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		CO5	To discuss the methods of implementing design thinking in the real world.
21MAT21	Advanced Calculus And Numerical methods	CO1	Apply the concept of change of order of integration and change of variables to evaluate multiple integrals and their usage in computing the area and volume.
		CO2	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
		CO3	Formulate physical problems to partial differential equations and to obtain solution for standard practical PDE's.
		CO4	Apply the knowledge of numerical methods in modelling of various physical and engineering phenomena
		CO5	Solve first order ordinary differential equations arising in engineering problems
21PSP13/23	Problem solving through Programming	CO1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
		CO2	Apply programming constructs of C language to solve the real world problem
		CO3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
		CO4	Explore user-defined data structures like structures, unions and pointers in implementing solutions
		CO5	Design and Develop Solutions to problems using modular programming constructs using functions.
21ELN14/24	Basic Electronics & Communication Engineering	CO1	Describe the concepts of electronic circuits encompassing power supplies, amplifiers and oscillators.
		CO2	Present the basics of digital logic engineering including data representation, circuits and the microcontroller system with associated sensors and actuators
		CO3	Discuss the characteristics and technological advances of embedded systems.
		CO4	Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved including antennas
		CO5	Explain the different modes of communications from wired to wireless and the computing involved.
21EME15/25	Elements of Mechanical Engineering	CO1	Understand basic concepts of mechanical engineering in the fields of energy and its utilization, materials technology, manufacturing techniques, and transmission systems through demonstrations
		CO2	Understand the application of energy sources in Power generation and utilization, Engineering materials, manufacturing, and machining techniques leading to the latest advancements and transmission systems in day to day activities.
		CO3	Apply the skills in developing simple mechanical elements and processes.
		CO4	Acquire knowledge of various engineering materials and metal joining techniques.

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		CO5	Acquire essential experience with heat transfer devices.
21CHEL16/26	Engineering Chemistry Lab	CO1	Determine the pKa and coefficient of Viscosity of a given organic liquid.
		CO2	Estimate the amount of substance present in the given solution using Potentiometer Conductometric and Colorimetric.
		CO3	Determine the total hardness and chemical oxygen demand in the given solution by volumetric analysis method
		CO4	Estimate the percentage of Nickel, copper and Iron in the given analyte solution by titration method..
		CO5	Demonstrate flame photometric estimation of sodium & potassium and the synthesis of nanomaterials by Precipitation method
21CPL17/27	Computer Programming Lab	CO1	Define the problem statement and identify the need for computer programming
		CO2	Make use of C compiler, IDE for programming, identify and correct the syntax and syntactic errors in programming
		CO3	Develop algorithm, flowchart and write programs to solve the given problem
		CO4	Demonstrate use of functions, recursive functions, arrays, strings, structures and pointers in problem solving.
		CO5	Document the inference and observations made from the implementation
21EGH28	Professional Writing Skills in English	CO1	To understand and identify the Common Errors in Writing and Speaking
		CO2	To Achieve better Technical writing and Presentation skills.
		CO3	To read Technical proposals properly and make them to Write good technical reports.
		CO4	Acquire Employment and Workplace communication skills.
		CO5	To learn about Techniques of Information Transfer through presentation in different level
21SFH29	Scientific Foundations of Health	CO1	To understand Health and wellness (and its Beliefs)
		CO2	To acquire Good Health & It's balance for positive mindset
		CO3	To inculcate and develop the healthy lifestyle habits for good health
		CO4	To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world
		CO5	To adopt the innovative & positive methods to avoid risks from harmful habits in their campus & outside the campus.