2022-2023

21PHU01	Core : I MECHANICS	SEMESTER	LEVEL
CO1	Review the fundamental ideas of the arrangement of particles, Rigid bodies, statics and Hydrostatics		K1
CO2	Comprehend the fundamental parameters engaged with Dynamics and statics of a Rigid bodies		K2
CO3	Investigate the concept of moment of inertia, centre of mass, friction, laws of floatation and centre of gravity	1	K3
CO4	Measuring the dynamic prospects of different rigid bodies		K4
CO5	Estimate the vertex and base in the surface of the liquid, metacentric height of a ship		K5
21PHU02	MATHEMATICS – I	SEMESTER	LEVEL
CO1	recall the definitions of matrices, polynomial equations, Laplace, inverse Laplace transforms and Fourier series.		K1
CO2	explain the operations of matrix, roots of the equations, standard functions of Laplace , inverse Laplace transforms and Fourier series.		K2
CO3	apply the concepts of matrices, theory of equations , Fourier series of functions, Laplace and inverse Laplace transforms to solve the problems.	1	K3
CO4	analyze Cramer's Rule, Irrational roots, complex roots , hyperbolic functions and Transform of $tf(t), f(t)/t$.		K4
CO5	evaluate the problems in Laplace transforms, inverse Laplace transforms, Matrices, Reciprocal Equations and Fourier series.		K5

21FCU01	Environmental studies (Curriculum as recommended by UGC)	SEMESTER	LEVEL
CO1	Illustrate the features of the Indian rural economy andthe role of agriculture in Indian Economy		K1
CO2	categorize the core contents of the land tenure systemand land reforms in India.		K2
CO3	identify the problems of agricultural labour and implementation of mechanization.	1	K3
CO4	examine the agricultural marketing system, analysis the consequences of price fluctuations and evaluate theagricultural progress during plan periods		K4
CO5	appraise the financial sources and credit system and assessthe causes for rural indebtedness		K5
21PHU03	HEAT & THERMODYNAMICS	SEMESTER	LEVEL
CO1	recollect the basic definitions of thermocouple, Specific heat,Mean free path, Degree of freedom, Conduction, Radiation and laws of Newton cooling, Kirchhoff's, Stefan and Planck's, Wein's, Rayleigh-Jean's and Joule-Thomson Effect.		K1
CO2	summarize the terms of Thermometer, Calorimeter, Viscosity of gases,Thermal conductivity, Thermal diffusivity, Steady state, Isothermal and Adiabatic, Entropy. Explain the Peculiar properties of He II		K2
CO3	demonstrate the various types of thermometers and apply the theories of heat in Liquefaction of air, hydrogen and helium, apply various thermodynamic laws in different relations and functions	1	K3
CO4	investigate the various experiments Seebeck and peltier effect, Thermal conductivity of bad and good conductors, Carnot cycle and otto cycle		K4
CO5	determine the specific heat capacity of solid, liquid and gas and Evaluate the critical constants Critical constants by using Van der Waals equation		K5

21PHU04	MATHEMATICS – II	SEMESTER	LEVEL
CO1	recall the basic concepts of curvature ,differentiation and integration .		K1
CO2	express radius of curvature, double and triple integrals, beta and gamma functions, ordinary and partial differential equations.		K2
CO3	apply the formula for Beta - Gamma functions, radius and centre of curvature for finding the results.	2	K3
CO4	analyze the general of ordinary, partial differential equations , Beta - Gamma functions and change of order of integrations..		K4
CO5	Evaluation of multiple integrals and differential equations.		K5
21MAU04	**ALLIED PHYSICS – I**	SEMESTER	LEVEL
CO1	remember the basic terms of universal law of gravitation and elastic properties of solids, sound propagation, solar energy electric and magnetic fields		K1
CO2	discuss the fundamentals of thermodynamic state properties for liquids and vapors, and for ideal gases	1	K2
CO3	examine the working principle of bending moment and conversions of Galvanometer concepts		K3
CO4	categorize techniques related with fabrication of solar cell, measurement of solar radiations.		K4
CO5	assess the acceleration due to gravity, Young's modulus bending method, Frequency of AC circuits		K5

21MAU09	ALLIED PHYSICS – II	SEMESTER	LEVEL
CO1	remember the basic concepts in Matter waves, Nuclear forces, principles of lasers, Semiconductor devices, Number system		K1
CO2	explain the fundamentals of De Broglie's matter wave, Binding energy, conditions for laser actions, characteristics of Semi-conductors, laws of Boolean algebra		K2
CO3	discuss the working techniques of photoelectric cells, logic gate circuits, Semiconductor devices	2	K3
CO4	determine the concepts of photoelectric equation, Nuclear structure, Raman effect		K4
CO5	estimate the Particle accelerator, Lasers, Rectifiers circuits, various semiconductor devices		K5
21MAU05	ALLIED PRACTICAL	SEMESTER	LEVEL
CO 1	identify the basic principle and working of Pendulum, Spectrometer, Potentiometer		K1
CO 2	demonstrate the construction and working model of different experiments		K2
CO 3	use the mathematical formulas to calculate the quantitative results obtained from various experiments	1& 2	K3
CO 4	evaluate the different set of values from the experiments		K4
CO 5	interpret the values obtained from performed experiments		K5

21FCU02	YOGA AND ETHICS	SEMESTER	LEVEL
CO1	recollect the basic terminologies in yoga and value education	2	K1
CO2	demonstrate the importance of yoga, mental exercises, principles of life and components of values.		K2
CO3	apply the techniques of dynamic & mental exercises and philosophical values in real life		K3
CO4	classify the different types of asanas, stages of mind, analysis of thought, ethical values and social values.		K4
CO5	evaluate how the yoga and value education make a person strong both physically and mentally		K5
21PHU05	**PHYSICS – PRACTICAL I**	**SEMESTER**	**LEVEL**
CO1	recollect the modulus of different materials and give its value	1 & 2	K1
CO2	calibrate the voltmeter and ammeter, discuss the specific resistance of wire by using electronic circuits		K2
CO3	calculate the magnetic moment, gravitational force, frequency by using different methods		K3
CO4	examine the viscosities of different liquids and thickness of different wires		K4
CO5	determine the refractive index of Hollow prism and Solid prism using spectrometer		K5
21PHU06	**OPTICS**	**SEMESTER**	**LEVEL**
CO 1	identify the basic terms of aberrations and its types, dispersive power of prism, Interference, Diffraction, Polarization and laser its mechanisms	3	K1
CO 2	discuss chromatic and achromatism in prism and lens, Fresnel's Biprism, Zone Plates, Fraunhofer diffraction at a Single light, Optical Activity explain about Huygen's and Fresnel's theory.		K2
CO 3	demonstrate the concepts of laser, polarimeter, Michelson interferometer and Newton's Rings experiments		K3
CO 4	Criticize Ruby, He-Ne, CO_2 laser, the monochromatic light's wave length and aberrations of lens		K4

			SEMESTER	LEVEL
CO 5	determine the dispersive power, resolving power, refractive index and specific rotation of liquid compare Fresnel and Fraunhofer diffraction and Circularly and Elliptically Polarized light			K5
21PHU07	**CHEMISTRY - I**		**SEMESTER**	**LEVEL**
CO 1	define the basic terms involved in extraction of metals, Fuels, Fertilizer, Water treatment. recall Organic reactions, Chemical kinetics & Photo Chemical reaction.			K1
CO 2	summarize the basic concepts and methods involved in extraction of metals, Fuels, Water treatment, Organic reactions, Chemical kinetics & Photo Chemistry			K2
CO 3	illustrate Water treatment principles in Water purification techniques & Chemical kinetics in laboratory reactions	3		K3
CO 4	examine the mechanism of electrophilic substitution reactions, Compare Thermal & Photo chemical reactions calculate hardness of Water sample			K4
CO 5	evaluate the problems related with Extraction of metals, Fertilizers, Fuels & Rate of Chemical reactions			K5

21AEU01	INFORMATION SECURITY	SEMESTER	LEVEL
CO 1	Recall the fundamental concepts of Information Security,Risk and Security policies		K1
CO 2	Discuss the concepts of Risks, vulnerabilities, ethical andprivacy issues		K2
CO 3	Apply the ideas in security planning and construct thepolicies	3	K3
CO 4	Categorize the Privacy, Ethical Issues, Laws, SoftwareIssues and Crimes		K4
CO 5	Summarize Cryptography, cipher text and threats ininformation security		K5

21NMU01A	INDIAN WOMEN AND SOCIETY	SEMESTER	LEVEL
CO 1	know women status in Indian society as an academic discipline		K1
CO 2	interpret the various roles of women, challenges and issues faced by them in the society		K2
CO 3	find out solutions to their legal issues and product themselves from the violence against women emphasize on women entrepreneurship for their empowerment	3	K3
CO 4	critically analyze the lifestyle and challenges of women		K4
CO 5	discuss the importance of women health and issues related to women in general		K5

21PHU08	MATHEMATICAL PHYSICS	SEMESTER	LEVEL
CO1	state the types of matrices, Vector and Scalar functions, Mean, Median, Mode, Curve fitting, Definitions and Generalized Displacement, Velocity, Potential and force		K1
CO2	interpret Eigen values, Gradient of a scalar field, Moment generating function, Laws reducible to linear law, Generalized acceleration, momentum, Physical significance of H		K2
CO3	solve problems in Matrix, Divergence and Curl of a vector function, Mean, Median, Mode, Probability, Graphical method	4	K3
CO4	examine Eigen vectors, method of group averages, Stokes theorem, simple pendulum, Linear harmonic oscillator using Lagrangian and Hamiltonian function		K4
CO5	evaluate the principles of mechanics, solve problems in Cayley-Hamilton theorem, Gauss Divergence theorem, Standard Deviation, Equations involving three constants, Principle of least squares, Fitting a straight line and a parabola		K5
21PHU09	CHEMISTRY - II	SEMESTER	LEVEL
CO1	define basic terms involved in Coordination Chemistry, Phase Rule, Electro Chemistry & Analytical techniques & Usage of bio molecules		K1
CO2	elaborate the basic knowledge on Coordination Chemistry, bio molecules, Phase diagram, Electro Chemistry & Analytical techniques		K2
CO3	illustrate Coordination compounds in various applications, Phase diagram for Alloy system, EMF series to construct Cell, Analytical techniques to determine the structure of Chemical compounds	4	K3
CO4	examine the problems related with Cell construction, Alloy formation, Errors in Analytical techniques calculate EMF of the Cell		K4
CO5	evaluate the importance of Coordination Compounds, Analytical techniques determine the structure of Glucose & Fructose		K5

21PHU10	PHYSICS - PRACTICAL II	SEMESTER	LEVEL
CO1	find the various principles, procedures and methods through working in groups in performing the laboratory experiments and by compare the results	4	K1
CO2	realize the formation of spectrum with prism and grating		K2
CO3	calculate temperature coefficient by construct various carey foster bridge		K3
CO4	measure simple electrical and magnetic quantities such as voltage, current, and earth's magnetic field		K4
CO5	determine the young's modulus of materials by using Koenig's method		K5
21PHU11	ALLIED CHEMISTRY - PRACTICAL	SEMESTER	LEVEL
CO1	define the concepts of aromaticity, acid-base neutralization reaction, properties of saturated compounds & principles of volumetric law	2&4	K1
CO2	estimate the amount of substances present in unknown sample by using volumetric analysis & discuss about organic reagents		K2
CO3	calculate normality of unknown solution & weight of unknown substances examine organic compounds		K3
CO4	categorize & identify organic compounds based on its functional group. distinguish qualitative & quantitative analysis		K4
CO5	evaluate organic compounds by organic qualitative analysis determine the chemical reactions		K5

21PHU13	SOLID STATE PHYSICS	SEMESTER	LEVEL
CO1	outline the basic terms of crystal, unit cell, Meissner effect, Isotopes effect and Bragg's law, Dulong and Pettit's law, ohm's law, hall effect know about the magnetic materials, conducting materials, dielectric materials and superconducting materials		K1
CO2	summarize the types of crystals, Miller indices, Dielectric constant and displacement vector, Thermodynamic effect, Electrical conductivity – Thermal conductivity, Wide-Mann and Franz ratio		K2
CO3	demonstrate the Bragg's law and Dulong and Pettit's law, Sommerfield model calculate the value of hall co-efficient using hall effect illustrate the free electron theory in conducting materials	4	K3
CO4	classify the various types of magnetic materials (Dia, Para and ferro) and polarizability derive the Clausius mossotti relation for Dielectrics		K4
CO5	determine Crystal structure for SC, HCP, BCC, FCC, NaCl		K5
21SEPHU01	ENERGY RESOURCES	SEMESTER	LEVEL
CO1	reminisce the basic concepts of conventional energy sources and non-conventional energy sources		K1
CO2	realize the principles of different types of renewable energy sources		K2
CO3	utilize the learned concepts of renewable energy in its applications	4	K3
CO4	identify and evaluate the reasons behind the use of different renewable energy sources		K4
CO5	assess the performance of renewable energy sources		K5

21AEU02	CONSUMER RIGHTS (CURRICULUM AS RECOMMENDED BY UGC)	SEMESTER	LEVEL
CO1	memorize the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards	4	K1
CO2	explain the Consumer Protection Law in India		K2
CO3	impart sound practical grounding about the practice of consumer law and the procedure followed		K3
CO4	evaluate the regulations and legal actions that helps to protect consumers		K4
CO5	analyze the knowledge and skills needed for a career in this field		K5
21PHU12	PROPERTIES OF MATTER & SOUND	SEMESTER	LEVEL
CO 1	define the terms Elasticity, Stress, Strain, Poisson's ratio, Cantilever, Rigidity modulus, Young's modulus, Surface Tension, Viscosity recall the concepts in Acoustics	4	K1
CO 2	interpret the different kinds of moduli via experimental methods and fundamentals of surface tension discuss the theories related to viscosity understand the wave phenomena, in general and sound wave in particular		K2
CO 3	work on the experimental design and studies on project topics such as - Young's modulus for different types of wood - variation of surface tension for different detergents - Viscosity of different types of ink and to arrive at knowledge of its fluidity - wide applications of Bernoulli's equation - variation of surface tension with temperature by Jaeger's method - find the depth of the sea using ultrasonic		K3

CO 4	analyze and comprehend regarding the strength of the solid materials of different size differentiate between the streamline and turbulent flow of liquids and reason out the effects of liquid while flowing compare the viscosity and interfacial surface tension between the liquids analyze the characteristics of sound and requisites of good acoustics		K4
CO 5	evaluate the connections between theory, experiment and applications		K5
21PHU14	**ELECTRONICS & COMMUNICATION**	**SEMESTER**	**LEVEL**
CO1	recognize the concepts of basic electronic components		K1
CO2	interpret about the essentials of AM and FM modulation and demodulation		K2
CO3	illustrate the principle and functioning of basic electronic components like diodes, LED, transistors, FET and UJT	5	K3
CO4	classify the need for transistor biasing, construction and operations of the electronic components		K4
CO5	analyze, evaluate and to compare the concepts behind the working of amplifiers, oscillators, semiconducting diodes, rectifiers and filters		K5

21PHU15A/ 21PHU15B/ 21PHU15C	INSTITUTIONAL TRAINING/ ARTICLESHIP TRAINING/ MINI PROJECT	SEMESTER	LEVEL
CO1	identify the problems & solutions related to Institutional Training, Industrial Training		K1
CO2	explain the principles involved in concerned Mini projects & Summarize the processes in various Industries		K2
CO3	solve the problems in concerned project works & also Produce excellent project report for both Institutional Training & Mini projects	5	K3
CO4	examine different types of problems, principles, Experimental techniques & applications of concerned project works		K4
CO5	design new machines, principles & applications for future generations& evaluate different issues related to Science & Technology		K5
20PHUOE1	PHYSICS IN DAY TO DAY LIFE (OFFERED FOR STUDENTS OF OTHER UG PROGRAMMES / DEPARTMENTS)	SEMESTER	LEVEL
CO 1	identify the measurements, Electric Current, Electricity, Magnetism, Electrolysis, Magnetic field effect and Natural Phenomena's in Atmosphere		K1
CO 2	explain the concepts in Electricity, standard units and Types of Motion, Electric power, Effects of current and Magnet, lightning, thunder, water harvesting, coal and petroleum		K2
CO 3	perform different SI units in measurement, electricity and magnetism, electric potential, resistance, chemical effect of Electric current and magnetism	5	K3
CO 4	criticize the measurements of different units, Electricity, Resistance, associate reaction of magnetic Poles, Protection against natural calamities,		K4
CO 5	interpret the measuring, electric current, Laws in Physics, electricity and magnetism, Natural Resources		K5

21PHU16A	DIGITAL ELECTRONICS AND MICROPROCESSOR	SEMESTER	LEVEL
CO 1	identify different number systems, basic laws and properties in binary arithmetic recall De-Morgan's theorems and memory devices describe basics of flip-flops and microprocessors	5	K1
CO 2	interpret binary arithmetic, Boolean algebra, Logic gates, arithmetic circuits and instructions in microprocessors		K2
CO3	solve Boolean expressions and binary arithmetic. Apply Boolean algebra and logic gates for the construction of flip-flops and memory devices.		K3
CO4	design shift registers and modulus counters from flip-flops. Analyze the architecture and working of microprocessor.		K4
CO5	construct a circuit by analyzing the logic gate operations and flip-flops. Program the 8085 Microprocessor		K5
21PHU16B	SOIL PHYSICS	SEMESTER	LEVEL
CO1	outline the importance of soil physics	5	K1
CO2	summarize the properties of soil and water flow in soil		K2
CO3	apply physics laws to study the properties of soil use mathematical models to quantify transfer processes for air, water, and solutes in saturated soils		K3
CO4	analyze the transfer processes for air, water, and solutes in water unsaturated soils		K4
CO5	estimate and measure the various properties of soil using various mathematical models		K5

21PHU16C		GEO PHYSICS	SEMESTER	LEVEL
CO1		recall the structure of earth recollect the Definition of earthquakes, seismographs, fossils		K1
CO2		discuss about the origin and structure of earth	5	K2
CO3		distinguish plateaus and plains. explain the importance of invertebrates and classifications of vertebrates		K3
CO4		infer the topography of earth		K4
CO5		criticize the evolution of man, elephant and horse and the flora of India		K5
21SEU02		LIFE SKILLS (JEEVAN KAUSHAL) (CURRICULUM AS RECOMMENDED BY UGC)	SEMESTER	LEVEL
CO1		identify the common communication problems, what good communication skills are and what they can do to improve their abilities		K1
CO2		demonstrate communication through the digital media		K2
CO3		prepare themselves to situations as an individual and as a team	5	K3
CO4		analyse various leadership models, strengths and abilities to create their leadership vision		K4
CO5		appraise their potential as human beings and conduct themselves properly in the ways of the world		K5

21PEU01	LASERS (SELF-STUDY)	SEMESTER	LEVEL
CO1	define Absorption, Emission, Population Inversion, Coherence, LASER, Semiconductor, Diode		K1
CO2	explain the phenomenon fluorescence, stimulated emission, working of Population inversion, optical pumping, Gas Laser, Q Switched operation of Laser		K2
CO3	illustrate the properties of Laser light in Cavity dumping, Diode doped solid state laser, Organic dye lasers, chemical lasers.	5	K3
CO4	investigate the Interaction of Radiation and Matter, working of Gas Laser and Semi-Conductor Laser, Resonant Cavity		K4
CO5	compare the various forms of Diode, Stimulated emission and Absorption. discuss X ray Laser and Tunable Laser		K5
21PHU17	QUANTUM MECHANICS AND RELATIVITY	SEMESTER	LEVEL
CO1	evoke wave properties of matter, basic principles of wave equation of the quantum mechanics and theory of relativity		K 1
CO2	realize the concept of uncertainty principle, schrodinger's wave equation, operators in quantum mechanics		K 2
CO3	impose schrodinger's wave equation to solve one, two, three dimensional problems	6	K 3
CO4	clarify the nature of De- Broglie relation, particle in a box, Lorentz transformation equation		K 4
CO5	assess the dual nature of matter, normalization of wave function and orthogonality of energy Eigen function		K 5

21PHU18	ATOMIC AND NUCLEAR PHYSICS	SEMESTER	LEVEL
CO 1	summarize the laws of electricity and magnetism		K1
CO 2	recognize the techniques, principles of thermoelectricity, magnetic materials and dynamics of charged particles		K2
CO 3	interpret the learned concepts of thermoelectricity, electrostatic principles in day to day life	6	K3
CO 4	analyze the different formulae related to dynamics of charged particles, Helmholtz equation of varying current and thermoelectricity		K4
CO 5	determine the motion of charged particles, magnetic properties of materials		K5
21PHU19	ELECTRICITY AND MAGNETISM	SEMESTER	LEVEL
CO1	illustrate Thomson's Parabola method, Dempster's mass spectrograph, Aston's mass spectrograph, The Bohr atom model, Vector model, The Stern and Gerlach experiment, Larmor's theorem		K1
CO2	determine e/m of positive rays, to demonstrate the Atom Models, Magneto Optical Properties of Spectrum, Radioactivity, Nuclear Detectors and accelerators		K2
CO3	examine Positive rays, Periodic classification of elements, Fine Structure of the sodium D line, Alpha, Beta and Gamma rays, nuclear fission and fusion	6	K3
CO4	criticize mass defect and packing fraction of positive rays, the Critical Potentials, Magnetic dipole moment due to spin, Half-life period, Mean life period		K4
CO5	mention the properties of positive rays, Periodic classification of elements, Zeeman effect, Paschen - Back effect, Stark effect, Radioactivity		K5

21PHU20		APPLIED INSTRUMENTATION	SEMESTER	LEVEL
CO 1		recite the concepts of basic measuring temperature, pressure, thermal and nuclear measurements, X-ray spectrum and data acquisition systems	6	K1
CO 2		restate about the essentials of calibrating an instrument, measuring radiations, oscilloscopes and digital converters and also to explain x-ray spectra		K2
CO 3		use the principle and functioning of thermistors, thermometers, pressure measuring devices, GM counter and Coolidge tube		K3
CO 4		associate the need for problem analysis of measuring devices, signal display devices and Compton effect		K4
CO 5		analyze, evaluate and to compare the concepts behind the different types of thermometers, pressure measuring and radiation measuring devices, data conversion and display devices and analyzing the expression for change of wave length		K5
21PHU21		ELECTRONICS- PRACTICAL III	SEMESTER	LEVEL
CO 1		recite and demonstrate the construction of various electronic circuits using discrete electronic components and to study their performance	6	K1
CO 2		contrast the working principles of the electronic circuits and various applications of the discrete electronic components		K2
CO 3		use the various electronic circuits, components and express their function using their discrete components		K3
CO 4		associate the various characters of constructed electronic circuits using diodes, IC'S, UJT, FET, amplifiers and transistors		K4
CO 5		relate the difference between the use of various electronic circuits and analyze their waveform using CRO and AFO		K5

21PHU22	DIGITAL ELECTRONICS AND MICROPROCESSOR - PRACTICAL IV	SEMESTER	LEVEL
CO1	remember the basic components of microprocessor and the images of logic gates and truth tables	6	K1
CO2	outline the microprocessor programs for primary arithmetic operations		K2
CO3	examine the working of microprocessor with flowchart and program		K3
CO4	analyze the various truth tables of universal building blocks and Demorgan's theorem using gates		K4
CO5	show the performance of flip-flops, code converter, adder and subtractor using discrete components		K5
21PHU23A	BASIC CONCEPTS OF C, C++	SEMESTER	LEVEL
CO1	assemble basic knowledge about Programming in C, Conditional statements, different arrays, OOPs and Inheritance	6	K1
CO2	explain if statements, else if and break statements, OOPS and inheritance types		K2
CO3	examine these structures of C and C++ in programming various programs in mathematical and physics usage, arrays and OOPs values		K3
CO4	design the mathematically useful programs and apply in computer field		K4
CO5	estimate the programming in C and C++ and OOPs		K5

21PHU23B	INTRODUCTION TO SPACE PHYSICS	SEMESTER	LEVEL
CO1	develop the concepts of the Sun, Cosmic Rays, Galactic astronomy, stellar objects and age of stars		K1
CO2	explain about cosmic objects, milky way, Hubble telescope, Dwarf Galaxies, Composition of stars,		K2
CO3	organize this learning about cosmic things in detecting about new forms and stars in astronomy and new finding of stars and	6	K3
CO4	implement features of Sun temperature of corona, Hubble theory behind Hubble telescope, cosmic radiation time variation, classification of galaxies, luminous of stars, stellar revolution, nebula or supernova		K4
CO5	criticize the concepts of the Sun, Cosmic Rays, Galactic astronomy, stellar objects and age of stars, Neutron starts		K5
21PHU23C	SMART MATERIALS	SEMESTER	LEVEL
CO1	assemble the different types of polymer materials, smart actuators, smart composites		K1
CO2	explain polycrystalline systems, Piezoelectric strain sensors, the knowledge about low strain smart sensors - Matteuci Effect and Nagoka-Honda Effect		K2
CO3	discuss Magneto strictive Actuation, Composites based on Classical Laminated Plate Theory	6	K3
CO4	sketch about the composite beams, Composites based on Classical Laminated Plate Theory		K4
CO5	criticize Intelligent System Design, Wiedemann Effect about the advances in smart structures		K5

21SEPHU03	PROGRAMMING IN C, C++ - PRACTICAL	SEMESTER	LEVEL
CO1	acquire basic knowledge about Programming in C and C++, and Recall program coding		K1
CO2	perform the Arithmetic Operation through C &C ++ Programs and like addition subtraction division both in integers and matrix type using Do-While loop		K2
CO3	compare two files, Characters and Strings using C++ and Check whether they are identical or Different. And perform mathematical function	6	K3
CO4	calculate Matrix addition and matrix Inverse functional program		K4
CO5	converting Number to Words and Day name using C &C++ Program		K5