Name of the Department : PHYSICS
Programme : UG

S.No	Course Code	Course Name	Course outcome
SEMESTER-I			
1.	15UPHC11	Core I: Foundation Course - Basic Physics	• Acquire knowledge in the basic concepts of Basic Physics • Familiarize with vectors and various vector operations • Gain knowledge in Newton's laws of motion and wave motion • Understand the basic concepts of thermal physics and electrostatics. • Acquire skill in electric current and solving simple circuits
2.	15UPHC12	Core -II: Properties of Matter	• Able to distinguish between the different forces that hold atoms together • Understand the elastic properties of Solids • Gain knowledge on the basic concept of capillarity and its applications • Acquire knowledge in Bernoulli's theorem will helps to understand the working of flying object like aeroplanes etc • Enable to solve problems in properties of matter.
3.	15UPHN11	Non Major Elective Course -I: Physics in everyday life I	• Understand and solve the simple problems in thermal physics • Gain knowledge on the working of filament and CFL lamps • Able to solve simple problem based on Ohm's law • Gain awareness on need for renewable energy resources
4.	15UPHE11	Enrichment course I : Introduction to PC Software	• Acquire the skill to use the various option in MS Word • Develop to create the mail merge

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			document • Apply the Excel function for scientific application • Gain knowledge in preparing charts using excel worksheet
SEMESTER-II			
1.	15UPHC21	Core: III Mechanics and Sound	• Gain knowledge on the basic concepts of mechanics and sound • Acquire knowledge in conservation of energy under conservative and non-conservative forces • Able to calculate moment of inertia for different objects • Acquire knowledge on different types of collision and loss energy in different types of collision • Understand the concepts related to velocity of sound in different media and Doppler effect • Understand the theory of reflection of sound and various application of Ultrasonic waves
2.	15UPHC22	Core: IV: Gravitation and Relativity	• Able to solve problems in gravitation and relativity • Get familiarity in planetary motion and law governing the planetary motion • Gain knowledge in the basic concepts of rocket and satellite motion • Understand the basic difference Newton Relativity & Einstein's relativity
3.	15UPHN21	Non Major Elective Course II: Physics in everyday life II	• Acquire knowledge in the basic concepts of physics • Decipher the concept of memory storage devices • Understand the internet and intranets communication system • Familiarize with the design and

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			operation of fiber optical communication
4.	15UPHE21	Enrichment Course II: Photography	• Develop the creative ways to solve the variety of photography strategies. • Apply a high level of understanding to the issues surrounding the creation of digital artwork. • Know how to use various features of the camera to have creative control of photographs. • Understand the use of photo editing software to improve the overall appearance of images.
SEMESTER-III			
1.	15UPHC31	Core – VI : Optics	• Apply the fundamental principles of optics to solve problem in future careers. • Enable to handle microscope and form thin film and measure the radius of curvature of Plano convex lens. • Understand the dispersion of light and determine the dispersive power of the prism. • Application of interference, diffraction and polarization experiment.
2.	15UPHC32	Core – VII : Electricity	• Gain knowledge to solve electric fields for various charge distributions. • Enable to understand the concepts and properties of lines of force. • Analyze the combination of resistances in series and parallel. • Handle the galvanometers like Moving coil and D' Arsonval galvanometer. • Developed the skill to solve queries in the mechanism of heating effect.
3.	15UPHS31	Skill Based Course – I : Thermal Physics	• Thorough knowledge in fundamental principles of thermodynamics.

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			• Ability to understand the difference between different types of engines. • Acquire knowledge in liquefaction of different gases. • Understand the basic concepts of cryogenics. • Able to understand the basic concepts of Statistical Mechanics.
4.	15UPHV31	Value Based Course – I : Physics of Household Appliances – I	• Ability to understand the wire connection like single phase, three phase and fuse circuit • Develop the practical knowledge on various home lighting system • Gained knowledge in the electrical heating systems like water heater, electric stove, induction cooker • Decipher the different types of motor, and practical applications • Familiarize with principle and working of water cooler and air conditioner.
SEMESTER-IV			
1.	15UPHC41	Core – VIII : Electromagnetism	• Thorough knowledge in the basic concepts of electromagnetic induction. • Able to derive expression for growth and decay of current in different AC circuits. • Develop skill in constructing different AC bridges. • Understand the basic properties of magnetic materials. • Ability to understand the significance of Maxwell's equations.
2.	15UPHC42	Core - IX : Spectroscopy and laser Physics	• Understand the electromagnetic waves and their interaction with matter. • Knowledge about molecular structure using molecular methods (IR ,Raman) • Acquire knowledge to determine the

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			important functions of laser system • Develop the practical applications of laser spectroscopic methods in science and technology.
3.	15UPHO41	Optional / Elective Course – I : 1.Programming in C	• Acquired knowledge in C programming. • Enable to write simple C- programs • Able to solve simple Physics problems using C – Language • Develop an interest to study various computer languages.
	15UPHO42	Optional Course I: 2. Statistical Mechanics.	• Understand the basic rules of probability theory. • Ability to understand the different types of ensembles. • Understand the basic difference between the distribution laws like Maxwell-Boltmann, Fermi-Dirac,Bose- Einstein Statistics. • Basic knowledge acquired in quantum Statistics. • Be able to solve simple problem in Statistical Mechanics.
	15UPHO43	Optional Course I: 3..Mathematical Physics	• Familiarize with vector concepts. • Ability to understand matrices and make use of them. • Apply Fourier and Laplace transforms to solve Physics problems • Gained knowledge in numerical • methods to solve problems
SEMESTER – V			
1.	15UPHC51	Core – XI : Atomic Physics and Quantum Mechanics	• Enable to understand the depth concepts in atomic physics. • Solve the numerical problems in atomic physics. • Familiarize with the methods of X-ray spectrometer. • Understanding the medical applications of laser.

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			• Able to solve simple problems in quantum mechanics
2.	15UPHC52	Core – XII : Analog Electronics	• Acquire knowledge in the basic concepts of Analog Electronics • Developed to design circuits in Analog Electronics • Capable of solving problems in Analog Electronics • Familiarize with applications of junction diode and IC voltage regulators • Gained knowledge in CE mode single Stage transistor amplifier and related topics • Understand the construction and working of different types of oscillators. • Understand the fundamental concepts of communication system.
3.	15UPHC53	Core – XIII : Classical Mechanics	• Understand the basic difference between Newtonian Mechanics and Lagrangian Dynamics • Able to frame equation of motion for various system like simple pendulum using Lagrangian Dynamics • Develop the frame equation of motion for various system like Compound pendulum using Hamilton Dynamics • Familiarize with two body central force problem. • Acquire knowledge of variation principle and its application • Decipher the higher level concept in classical Mechanics While doing their post graduate
4.	15UPHO51	Optional / Elective Course – II 1. Programming in C++	• Understand the basic concepts of C++ language. • Enable to solve the problems in physics

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			using C++ language. • Acquire knowledge in principles of heritance • Able to use the pointers in the C++ programs.
	15UPHO52	Optional / Elective Course – II 2. Astro Physics	• Gained knowledge in planetary motion. • Enable to understand the formation of stars. • Acquired knowledge in cosmological models. • Understand perturbation in universe.
	15UPHO53	Optional / Elective Course – II 3. Opto electronics	• Analyze the fundamental concepts of optoelectronics • Impart knowledge of Active and passive display device. • Able to analyze the physics behind semiconductor optoelectronics devices. • Develop knowledge in transmission of light through fibers. • Acquired skill on different types of data storage devices.
5.	15UPHS51	Skill Based Course – II : Medical Physics	• Develop medical physics methods and tools related to physics, radiation biology and radiation detection and computation in research setting. • Gained integrated knowledge in a specialized area in efforts to form a foundation for future research in medical physics. • Understand the principles and use of imaging devices and instrumentation. • Apply knowledge of X- rays systems and to analysis and compare the performance of the X-ray imaging system. • Learn many of the techniques from system that have proven useful in

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			improving quality and safety in health care.
6.	15UPHS52	Skill Based Course - III : Energy Physics-I	• Evaluate the role of different energy sources in today and future energy supply. • Understand the availability of biomass in different area and weather condition and their potential attributes to biofuels production. • Gain knowledge in substainable energy. • Compare the benefits and drawbacks of different energy resources and technologies such as wind, geothermal, solar and biomass. • Measure and evaluate different solar energy technologies through the physical function of the devices.
SEMESTER – VI			
1.	15UPHC61	Core – XIV : Condensed matter Physics	• Gained knowledge in the basic concepts of Condensed Matter Physics • Familiarize with types of bonding and theories of specific heat capacity • Evaluate various types of crystal structure and X-ray diffraction techniques • Enable to understand the concept of occurrence of superconductivity • Analyze different types of magnetic materials, dielectric materials and its applications. • Enable to solve problems in condensed matter physics
2.	15UPHC62	Core – XV : Nuclear Physics	• Gained knowledge in different Nuclear Models. • Familiarize with half life and mean life period of radioactive elements. • Understand the importance of

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			applications of radio-isotopes. • Able to recognize the need of nuclear power plants. • Analyze the various types of electrostatic accelerators. • Apply quark models to analyze weak interactions such as beta decay and Kaon decay.
3.	15UPHC63	Core – XVI : Digital Electronics	• Understand the application of digital devices /circuits • Able to solve problem in digital electronics using K-map • Construct various digital circuit like multipliers adders • Enable to design simple memory circuits. • Analyze the use of various registers in the field of communication
4.	15UPHO61	Optional / Elective Course – III : 1. Electronic communication	• Utilize the basic knowledge in electronics in the field of communication • Ability to design and conduct experiments as well as to analyze and interpret data. • Ability to identify and prevent various hazards and timing problems in a digital design. • Ability to understand the different types of modulation.
	15UPHO62	Optional / Elective Course – III : 2. Microprocessor Fundamentals	• Understand the microprocessor memory unit. • Able to execute a simple program. • Familiarity with the looping, Counting, and indexing. • Gained knowledge in code conversion.
	15UPHO63	Optional / Elective Course – III :	• Understand the need of nanometer-sized devices.

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		3. Nanotechnology and Instrumentation	• Able to synthesis nanoparticles by simple methods. • Analyze the structure of nanomaterials. • Familiarize with basic knowledge of quantum nanostructures. • Enhance the interest for pursuing research in the field of nanotechnology. • Able to understand the various applications of nanotechnology.
5.	15UPHV61	Value Based Course – II : Physics household appliances – II	• Familiarize with types of cells and basic requirements modern electronic devices • Able to understand the functioning of modern display devices • Acquired knowledge on working of office devices like laptop, laser printer, 3D printer • Understand basic idea on space communication system.
5.	15UPHS61	Skill Based Course - IV : Energy Physics – II	• Recognize the need of using of non-conventional energy resources. • Apply the acquired knowledge to design new type of ocean energy and wave energy devices. • Familiar with future energy technologies. • Gained knowledge in power conversion and power generation techniques

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Allied Physics			
SEMESTER-I/III			
1.	15UMAA11/ 15UCHA31	Allied Course I/II: Allied Physics – I	• Acquire knowledge in mechanics, wave motions, properties of matter and thermal physics. • Ability to understand the applications of different organ pipes.

			• Familiarities with different types moduli of elasticity and calculations of Young's modulus using different methods. • Thorough knowledge in viscosity, surface tension and its applications.
SEMESTER-II/IV			
2.	15UMAA21/ 15UCHA41	Allied Course I/ II: Allied Physics – II -	• Acquire knowledge in optics, electrostatics, electronics and nuclear physics • Understand the effect of interference, refraction, diffraction and polarization of light. • Able to calculate electric field due to the charge arrangements and magnetic field due to current carrying conductors. • Apply electronics in a creative and innovative way to design develop and produce useful products.