



Department of Physics

B.Sc. Physics

S.No.	Course Code	Course Name	Course Outcomes
SEMESTER - I			
1.	18UPHC11	Core Course -I: Foundation Course - Basic Physics	<ol style="list-style-type: none">1. Acquire knowledge in the basic concepts of Basic Physics.2. Familiarize with vectors and various vector operations.3. Gain knowledge in Newton's laws of motion and wave motion.4. Understand the basic concepts of thermal physics and electrostatics.5. Acquire skill in electric current and solving simple circuits.
2.	18UPHC12	Core Course - II: Properties of Matter	<ol style="list-style-type: none">1. Able to distinguish between the different forces that hold atoms together.2. Understand the elastic properties of solids.3. Gain knowledge on the basic concept of capillarity and its applications.4. Acquire knowledge in Bernoulli's theorem will helps to understand the working of flying object like aeroplanes etc.5. Enable to solve problems in properties of matter.
3.	18UPHN11	Non -Major Elective Course- I : Physics in Everyday Life - I	<ol style="list-style-type: none">1. Understand and solve the simple problems in thermal physics.2. Gain knowledge on the working of filament and CFL lamps.3. Able to solve simple problem based on ohm's law.



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			4. Gain awareness on need for renewable energy resources.
4.	18UPHE11	Enrichment Course - I: Introduction to PC Software	1. Acquire the skill to use the various option in MS Word. 2. Develop to create the mail merge document. 3. Apply the Excel function for scientific application. 4. Gain knowledge in preparing charts using excel worksheet.
5.	18UMAA11	Allied Course - I: Physics – I	1. Acquire knowledge in mechanics, wave motions, properties of matter and thermal physics. 2. Ability to understand the applications of different organ pipes. 3. Familiarities with different types moduli of elasticity and calculations of Young's modulus using different methods. 4. Thorough knowledge in viscosity, surface tension and its applications.
SEMESTER – II			
6.	18UPHC21	Core Course - III : Mechanics and Sound	1. Gain knowledge on the basic concepts of mechanics and sound. 2. Acquire knowledge in conservation of energy under conservative and non- conservative forces. 3. Able to calculate moment of inertia for different objects. 4. Acquire knowledge on different types of collision and loss energy in different types of collision. 5. Understand the concepts related to velocity of sound in different media and Doppler effect. 6. Understand the theory of reflection of sound and various



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			application of Ultrasonic waves .
7.	18UPHC22	Core Course -IV: Gravitation and Relativity	<ol style="list-style-type: none">1. Able to solve problems in gravitation and relativity.2. Get familiarity in planetary motion and law governing the planetary motion.3. Gain knowledge in the basic concepts of rocket and satellite motion.4. Understand the basic difference Newton Relativity & Einstein,s relativity
8.	18UPHC2P	Core Course -V: Major Physics Practical –I	<ol style="list-style-type: none">1. Ability to determine the Young’s modulus of different materials.2. Able to calculate gravitational constant at different places.3. Familiar with measuring viscosities of different liquids.4. Able to calibrate voltmeter and ammeter of different ranges.5. Capable of determining the resistivity of different materials.6. Able to calculate the frequency of AC supply.
9.	18UPHN21	Non – Major Elective Course - II : Physics in Everyday Life -II	<ol style="list-style-type: none">1. Acquire knowledge in the basic concepts of physics.2. Decipher the concept of memory storage devices.3. Understand the internet and intranets communication system.4. Familiarize with the design and operation of fiber optical communication
10.	18UPHE21	Enrichment Course - II: Photography	<ol style="list-style-type: none">1. Develop the creative ways to solve the variety of photography strategies.2. Apply a high level of understanding to the issues surrounding



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			the creation of digital artwork. 3. Know how to use various features of the camera to have creative control of photographs. 4. Understand the use of photo editing software to improve the overall appearance of images.
11.	18UMAA21	Allied Course – II: Physics - II	1. Acquire knowledge in optics, electrostatics, electronics and nuclear physics. 2. Understand the effect of interference, refraction, diffraction and polarization of light. 3. Able to calculate electric field due to the charge arrangements and magnetic field due to current carrying conductors. 4. Apply electronics in a creative and innovative way to design develop and produce useful products.
12.	18UMAA2P	Allied Physics Practical	1. Ability to determine the Young's modulus of different materials. 2. Able to calculate the gravitational constant. 3. Familiar with measuring viscosities of different liquids. 4. Able to calculate the voltage and current sensitivity of a different types galvanometer. 5. Capable of determining the refractive index of solid prism made up of different glasses. 6. Ability to construct the logic gates by using discrete



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			components.
SEMESTER – III			
13.	18UPHC31	Core Course – VI: Optics	<ol style="list-style-type: none">1. Apply the fundamental principles of optics to solve problem in future careers.2. Enable to handle microscope and form thin film and measure the radius of curvature of Plano convex lens.3. Understand the dispersion of light and determine the dispersive power of the prism.4. Application of interference, diffraction and polarization experiment
14.	18UPHC32	Core Course - VII: Electricity and Electromagnetism	<ol style="list-style-type: none">1. Gain knowledge to solve electric fields for various charge distributions.2. Enable to understand the concepts of Current and Current density.3. Enable to understand the concepts of Magnetic fields.4. Thorough knowledge in the basic concepts of electromagnetic induction.5. Able to derive expression for growth and decay of current in different AC circuits
15.	18UPHS31	Skill Based Course - I: Thermal Physics	<ol style="list-style-type: none">1. Thorough knowledge in fundamental principles of thermodynamics.2. Ability to understand the difference between different types of engines.3. Acquire knowledge in liquefaction of different gases.



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			4. Understand the basic concepts of cryogenics. 5. Able to understand the basic concepts of Statistical Mechanics
16.	18UPHV31	Value Based Course-I: Physics of House Hold Appliances-I	1. Ability to understand the wire connection like single phase, three phase and fuse circuit. 2. Develop the practical knowledge on various home lighting system. 3. Gained knowledge in the electrical heating systems like water heater, electric stove, and Induction cooker. 4. Decipher the different types of motor and practical applications. 5. Familiarize with principle and working of water cooler and air conditioner.
17.	18UCHA31	Allied Course - III: Physics – I	1. Acquire knowledge in mechanics, wave motions, properties of matter and thermal physics. 2. Ability to understand the applications of different organ pipes. 3. Familiarities with different types moduli of elasticity and calculations of Young's modulus using different methods. 4. Thorough knowledge in viscosity, surface tension and its applications
18.	18UPHEX1	Extra Credit Course : Electricity and Electrical Appliances	1. Understand the basic concept of Direct current and Alternative current. 2. Learn various domestic electrical appliances. 3. Enable to rectify simple errors/troubles occurring in home



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			appliances. 4. Gain knowledge in different types of motors and transformer. 5. Develop skill in constructing simple circuits.
SEMESTER - IV			
19.	18UPHC41	Core Course - VIII : Mathematical Physics	1. Familiarize with vector concepts. 2. Ability to understand matrices and make use of them. 3. Ability to understand homogeneous and non-homogeneous linear equations. 4. Apply Fourier and Laplace transforms to solve Physics problems. 5. Familiarize with group theory concepts.
20.	18UPHC42	Core Course - IX: Spectroscopy and Laser Physics	1. Understand the electromagnetic waves and their interaction with matter. 2. Knowledge about molecular structure using molecular methods (IR,Raman). 3. Acquire knowledge to determine the important functions of laser system. 4. Develop the practical applications of laser spectroscopic methods in science and technology.
21.	18UPHC4P	Core Course -X: Major Physics Practical- II	1. Able to understand the dispersion of light and determine the dispersive power of the prism. 2. Ability to measure the wavelength of given monochromatic source and to determine the thickness of given thin wire by forming interference patterns.



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			<ol style="list-style-type: none">3. Able to compare the emf of different cells and to determine the emf of unknown cell using Potentiometer.4. Able to handle the Spectrometer and to determine the number of lines of the grating and wavelength of the different colours.5. Able to solve simple Physics problems using C Language
22.	18UPHO41	Major Elective Course - I: Programming in C	<ol style="list-style-type: none">1. Acquired knowledge in C programming.2. Enable to write simple C- programs.3. Able to solve simple Physics problems using C – Language.4. Develop an interest to study various computer languages.
23.	18UPHO42	Major Elective Course-I: Consumer Affairs	<ol style="list-style-type: none">1. The learners know about the need for consumer protection and the areas covered by consumer protection law.2. Learners will have a clear idea on legislative controls on unconscionable conduct, misleading or deceptive conduct, false or misleading representations and other unfair practices.3. The learners know the legal obligations of a supplier of goods or services.4. The learners know the obligations of manufacturers and the rights of consumers to compensation.5. The learners know the bodies available to protect the rights of the consumer and discuss their operations.
24.	18UPHO43	Major Elective Course – I : Statistical Mechanics	<ol style="list-style-type: none">1. Understand the basic rules of probability theory.2. Ability to understand the different types of ensembles.3. Understand the basic difference between the distribution laws like Maxwell- Boltmann, Fermi-Dirac, Bose- Einstein



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			Statistics. 4. Basic knowledge acquired in quantum Statistics. 5. Be able to solve simple problem in Statistical Mechanics
25.	18UCHA41	Allied Course – IV: Physics - II	1. Acquire knowledge in optics, electrostatics, electronics and nuclear physics. 2. Understand the effect of interference, refraction, diffraction and polarization of light. 3. Able to calculate electric field due to the charge arrangements and magnetic field due to current carrying conductors. 4. Apply electronics in a creative and innovative way to design develop and produce useful products.
26.	18UCHA4P	Allied Physics Practical	1. Ability to determine the Young's modulus of different materials. 2. Able to calculate the gravitational constant. 3. Familiar with measuring viscosities of different liquids. 4. Able to calculate the voltage and current sensitivity of a different types galvanometer. 5. Capable of determining the refractive index of solid prism made up of different glasses. 6. Ability to construct the logic gates by using discrete components
27.	18UPHEX2	Extra Credit Course: Applied Physics	1. Understand applications of laser. 2. Familiarize with the fiber optic communication system. 3. Evaluate the renewable energy resources.



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			4. Decipher the fundamental concepts of nanotechnology
SEMESTER - V			
28.	18UPHC51	Core Course - XI: Atomic Physics and Quantum Mechanics	<ol style="list-style-type: none">1. Ability to understand the depth concepts in atomic physics.2. The student can solve the numerical problems in atomic physics.3. Familiarity in working method of X-ray spectrometer.4. Capable of understanding the medical applications of laser.5. Ability to solve problem in Quantum Mechanics.
29.	18UPHC52	Core Course - XII: Analog Electronics	<ol style="list-style-type: none">1. Acquire knowledge in the basic concepts of Analog Electronics.2. Developed to design circuits in Analog Electronics.3. Capable of solving problems in Analog Electronics.4. Familiarize with applications of junction diode and IC voltage regulators.5. Gained knowledge in CE mode single Stage transistor amplifier and related topics.6. Understand the construction and working of different types of oscillators.7. Understand the fundamental concepts of communication system.
30.	18UPHC53	Core Course -XIII: Classical Mechanics	<ol style="list-style-type: none">1. Understand the basic difference between Newtonian Mechanics and Lagrangian Dynamics2. Able to frame equation of motion for various system like simple pendulum using Lagrangian Dynamics



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			3. Develop the frame equation of motion for various system like Compound pendulum using Hamilton Dynamics 4. Familiarize with two body central force problem. 5. Acquire knowledge of variation principle and its application 6. Decipher the higher level concept in classical Mechanics While doing their post graduate
31.	18UPH051	Major Elective Course - II: Optoelectronics	1. Analyze the fundamental concepts of optoelectronics. 2. Impart knowledge of Active and passive display device. 3. Able to analyze the physics behind semiconductor optoelectronics devices. 4. Develop the knowledge in transmission of light through fibers. 5. Acquired skill on different types of data storage devices.
32.	18UPH052	Major Elective Course - II: Astrophysics	1. Gained knowledge in planetary motion. 2. Enable to understand the formation of stars. 3. Acquired knowledge in cosmological models. 4. Understand perturbation in universe.
33.	18UPH053	Major Elective Course - II: Programming in C++	1. Understand the basic concepts of C++ language. 2. Enable to solve the problems in physics using C++ language. 3. Acquire knowledge in principles of heritance 4. Able to use the pointers in the C++ programs.
34.	18UPHS51	Skilled Based Course - II: Medical Physics	1. Develop medical physics methods and tools related to physics, radiation biology and radiation detection and computation in research setting.



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			<ol style="list-style-type: none">2. Gain integrated knowledge in a specialized area in efforts to form a foundation for future research in medical physics.3. Understand the principles and use of imaging devices and instrumentation.4. Apply knowledge of X- rays systems and to analysis and compare the performance of the X-ray imaging system.5. Learn many of the techniques from system that have proven useful in improving quality and safety in health care.
35.	18UPHS52	Skilled Based Course - III: Energy Physics- I	<ol style="list-style-type: none">1. Evaluate the role of different energy sources in today and future energy supply.2. Understand the availability of biomass in different area and weather condition and their potential attributes to biofuels production.3. Gain knowledge in sustainable energy.4. Compare the benefits and drawbacks of different energy resources and technologies such as wind, geothermal, solar and biomass.5. Measure and evaluate different solar energy technologies through the physical function of the devices.
SEMESTER – VI			
36.	18UPHC61	Core Course - XIV: Condensed Matter Physics	<ol style="list-style-type: none">1. Gained knowledge in the basic concepts of Condensed Matter Physics.2. Familiarize with types of bonding and theories of specific heat capacity.3. Evaluate various types of crystal structure and X-ray



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			diffraction techniques. 4. Enable to understand the concept of occurrence of superconductivity. 5. Analyze different types of magnetic materials dielectric materials and its applications. 6. Analyze different types dielectric materials and its applications. 7. Enable to solve problems in condensed matter physics.
37.	18UPHC62	Core Course - XV: Nuclear Physics	1. Gained knowledge in different Nuclear Models. 2. Familiarize with half life and mean life period of radioactive elements. 3. Understand the importance of applications of radio-isotopes. 4. Able to recognize the need of nuclear power plants. 5. Analyze the various types of electrostatic accelerators. 6. Apply quark models to analyze weak interactions such as beta decay and Kaon decay
38.	18UPHC63	Core Course - XVI: Digital Electronics	1. Understand the application of digital devices /circuits. 2. Able to solve problem in digital electronics using K-map. 3. Construct various digital circuit like multipliers adders. 4. Enable to design simple memory circuits. 5. Analyze the use of various registers in the field of communication
39.	18UPHC6P	Core Course - XVII: Major Physics Practical- III	1. Able to calculate the refractive index of different liquids by using hollow prism.



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			<ol style="list-style-type: none">2. Capable of determining the wavelength of the different colours in visible spectrum.3. Familiar with measuring the self-inductance of the coil by constructing AC bridges.4. Ability to calculate the value of Boltzmann constant by using BJT.5. Able to calculate the capacitance of unknown capacitor by constructing Wien's bridge.6. Capable to determine the value of high Resistance by using Spot Galvanometer
40.	18UPHC6Q	Core Course - XVIII: Major Physics Practical - IV	<ol style="list-style-type: none">1. Capable of constructing binary adder and subtractor circuits.2. Ability to construct different MOD counter circuits and to understand the applications of register circuits in the field of communication.3. Familiarize with applications of junction diode, Zener diode and IC voltage regulators.4. Gained knowledge in CE mode transistor characteristics will provide key ideas to construct different amplifier circuits.5. Ability to generate different wave shapes using multi vibrator and oscillator circuits.6. Thorough knowledge in handling modern electronics practical equipments
41.	18UPHO61	Major Elective Course - III: Nanotechnology and	<ol style="list-style-type: none">1. Understand the need of nanometer-sized devices.2. Able to synthesis nano particles by simple methods.3. Analyze the structure of nano materials.



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		Instrumentation	<ol style="list-style-type: none">4. Familiarize with basic knowledge of quantum nanostructures.5. Enhance the interest for pursuing research in the field of nanotechnology.6. Able to understand the various applications of nanotechnology
42.	18UPH062	Major Elective Course - III: Microprocessor Fundamentals	<ol style="list-style-type: none">1. Familiarity with the microprocessor memory UNIT.2. Ability to execute a simple program.3. Familiarity with the looping, Counting, and indexing.4. Knowledge developed in code conversion.
43.	18UPH063	Major Elective Course - III: Electronic Communication	<ol style="list-style-type: none">1. Utilize the basic knowledge in electronics in the field of communication.2. Ability to design and conduct experiments as well as to analyze and interpret data.3. Ability to identify and prevent various hazards and timing problems in a digital design.4. Ability to understand the different types of modulation.
44.	18UPHV61	Value Based Course-II: Physics of Household Appliances –II	<ol style="list-style-type: none">1. Familiarity with types of cells and basic requirements modern electronic devices.2. Ability to understand the functioning of modern display devices.3. Knowledge acquired on working of office devices like laptop, laser printer, 3D printer.4. Be able to understand basic idea on space communication



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			system.
45.	18UPHS61	Skill Based Course - IV: Energy Physics - II	<ol style="list-style-type: none">1. Ability to recognize the need of using of non-conventional energy resources.2. Apply the acquired knowledge to design new type of ocean energy and wave energy devices.3. Familiar with future energy technologies.