

**Department of Physics  
Programme Outcomes (PO)**

<b>PO No.</b>	<b>Upon completion of B.Sc. Physics Degree programme, the graduates will be able to</b>
<b>PO-1</b>	Acquire the knowledge related to academics with facts and figures related to various subjects in pure sciences such as Physics, Chemistry, Mathematics, etc. Which will enhance their learning
<b>PO-2</b>	Define the basic laws and to understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
<b>PO-3</b>	Apply the theories learnt and the skills acquired to solve real time problems.
<b>PO-4</b>	Acquire a wide range of problem solving skills, both analytical and computational and to apply them.
<b>PO-5</b>	Understand the theories which describe the nature of physical phenomena and to Establish them by experiments.
<b>PO-6</b>	Develop skills of observations and drawing logical inferences from the scientific experiments.
<b>PO-7</b>	Realize how interdisciplinary knowledge and skills acquired through Generic Elective or Ability or Skill enhancement courses helps in providing better solutions and new ideas for the sustainable developments and to solve day –to-day scientific problems
<b>PO-8</b>	Think creatively to propose novel ideas in explaining facts and figures or providing new solution to the problems.
<b>PO-9</b>	Use the computer to learn ICT skills for knowledge communication and knowledge dissemination.
<b>PO-10</b>	Develop and regenerate scientific competence independently and also in collaboration with others

### Programme Specific Outcomes (PO)

<b>PSO No.</b>	<b>Upon completion of B.Sc. Physics Degree programme, the graduates will be able to</b>	<b>Mapping</b>
<b>PSO-1</b>	Enhance the their academic abilities, personal qualities and transferable skills which will give them an opportunity to develop as responsible citizens.	PO-10, PO-4, PO-9
<b>PSO-2</b>	Define the basic laws involved in Physics and their related examples	PO-3, PO-2
<b>PSO-3</b>	Understand the concepts and significance of the various physical phenomena and their applications	PO-1, PO-2
<b>PSO-4</b>	Carry out experiments in the laboratory to understand the laws and concepts of Physics.	PO-5, PO-6
<b>PSO-5</b>	Understand with the profound knowledge of various fields of physics to lead a career	PO-2, PO-3
<b>PSO-6</b>	Identify their area of interest in academic and competitive fields related to their subject	PO-10, PO-7
<b>PSO-7</b>	Acquire analytical and logical skills for higher Education and other Entrepreneurships	PO-5, PO-7, PO-8

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH11</b>			
<b>Title</b>	<b>THERMAL PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>I</b>	<b>I</b>		
<b>Type</b>	<b>Core</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
1	Define the laws of thermodynamics.	2	Remembering
2	Illustrate the working of heat engines such as Carnot engine, Petrol engine, Diesel engine.	1,3	Understanding
3	Determine the concept of entropy and explain its physical significance.	3	Evaluate
4	Explain Lees Disc experiment and calculate the thermal conductivity by experiment.	3, 4	Understanding
5	Formulate Maxwells thermodynamic relations .	2	Creating
6	Explain the significance of Clausius-Clapeyron equation.	3,7	Evaluation, Understanding
7	Apply the concepts of thermodynamics into the applications such as Thermopile, Steam power plant, Refrigerator, Ice plant Air conditioning systems.	1,3	Application

### Course Outcomes (CO)

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH12</b>			
<b>Title</b>	<b>BASIC PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>I</b>		<b>I</b>	
<b>Type</b>	<b>Core</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Define the basic concepts related to modulus of elasticity.	2	Remembering
<b>CO-2</b>	Understand the different aberrations and discuss about defects of lenses.	3	Understanding
<b>CO-3</b>	Illustrate the different laws of transverse vibrations of a string.	1	Understanding
<b>CO-4</b>	Know the characteristics of musical sound and its intensity.	3	Remembering
<b>CO-5</b>	Understand the factors affecting the acoustics of building.	7	Understanding
<b>CO-6</b>	Determine reverberation and sabine's reverberation formula.	2	Evaluate
<b>CO-7</b>	Illustrate the production, detection and applications of ultrasonic waves.	7	Understanding
<b>CO-8</b>	Classify the materials as conductor, semi conductor and insulators.	3	Analyze
<b>CO-9</b>	Construct the full wave rectifier circuits and explain the operation of the circuits.	1,4	Applying

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH1P1</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS- I</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>I</b>	<b>I</b>		
<b>Type</b>	<b>CORE PRACTICAL</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Create basic ideas of measuring instruments.	1	Create
<b>CO-2</b>	Determine the Young's modulus of the materials using pin and microscope, scale and telescope.	4	Evaluate
<b>CO-3</b>	Determine the acceleration due to gravity using compound pendulum.	1,4	Evaluate
<b>CO-4</b>	Determine the AC frequency of sonometer.	4	Evaluate
<b>CO-5</b>	Compute the Dispersive power of prism.	3,4	Application
<b>CO-6</b>	Determine the thickness of wire using Airwedge.	4	Evaluate
<b>CO-7</b>	Analyze the characteristics of Zener diode.	3	Analyze
<b>CO-8</b>	Determine coefficient of viscosity by Poiseuille's method.	1,2,4	Evaluate
<b>CO-9</b>	Determine the specific heat capacity of liquid.	2,4	Evaluate

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH21</b>			
<b>Title</b>	<b>PHYSICAL OPTICS AND SPECTROSCOPY</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>I</b>	<b>II</b>		
<b>Type</b>	<b>Core</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Discuss the significance of interference with many experiments such as airwedge , Newton's rings Michelson's interferometer.	1,3,4	Create
<b>CO-2</b>	Distinguish between Fraunhofer and Fresnel diffraction.	3	Analyze
<b>CO-3</b>	Apply their skills to find the wavelength of spectral lines using Plane diffraction grating.	3,7	Application
<b>CO-4</b>	Distinguish the methods of polarisation by reflection and double refraction.	3,5	Analyze
<b>CO-5</b>	Construct Nicol prism and know the polarization of light using QWP.	7,3	Create
<b>CO-6</b>	Demonstrate the optical activity and specific rotatory power.	5,2,7	Understanding
<b>CO-7</b>	Understand the rotational spectra of diatomic molecules.	3	Understanding
<b>CO-8</b>	Analyze the vibration of CO <sub>2</sub> and H <sub>2</sub> O molecules.	7, 1,6	Analyze
<b>CO-9</b>	Explain the theory of Raman scattering and its application to Raman spectrum.	3	Understanding
<b>CO-10</b>	Explain IR and microwave spectrosopes with instrumentation.	7,6	Understanding

## Course Outcomes (CO)

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH22</b>			
<b>Title</b>	<b>MECHANICS AND ASTROPHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>I</b>	<b>II</b>		
<b>Type</b>	<b>Core</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Illustrate the different types of friction and its coefficients.	1,3	Understanding
<b>CO-2</b>	Define the basic concepts of angular velocity, angular acceleration and angular momentum.	1,7	Remembering
<b>CO-3</b>	Analyze the basic concepts of elastic and inelastic collisions.	1,5	Analyze
<b>CO-4</b>	Explain the theory of Projectiles.	2,3	Evaluate, Understanding
<b>CO-5</b>	Examine the basic concepts of escape velocity in launching of artificial satellites.	3	Analysis
<b>CO-6</b>	Apply the core knowledge and applications in satellites.	6,7	Application
<b>CO-7</b>	Discuss various theories of evolution of stars.	1	Create
<b>CO-8</b>	Explain various physical parameters that affect the stars in the cosmo.	5	Understanding

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH2P1</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS-II</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>I</b>	<b>II</b>		
<b>Type</b>	<b>CORE PRACTICAL</b>			
<b>Credits</b>	<b>1</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Determine the Young's modulus using cantilever	3	Evaluate
<b>CO-2</b>	Find the moment of inertia and rigidity modulus using Torsional pendulum.	6,7	Remembering
<b>CO-3</b>	Define perpendicular axes theorem using Bifilar pendulum.	5,3	Remembering
<b>CO-4</b>	Determine the coefficient of viscosity using Stoke's method.	2,4	Evaluate
<b>CO-5</b>	Determine the surface tension of a liquid.	4,7	Evaluate
<b>CO-6</b>	Determine the frequency of tuning fork using Melde's string.	3,4	Evaluate
<b>CO-7</b>	Analyze the Newton's ring experiment.	4	Analyze
<b>CO-8</b>	Apply skill to find the wavelength of spectral lines using plane transmission grating.	3,7	Application
<b>CO-9</b>	Determine the coefficient of thermal conductivity of a bad conductor using Lee's disc.	3,4	Evaluate



**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH31</b>			
<b>Title</b>	<b>ELECTRICITY,ELECTROMAGNETISM AND ELECTROMAGNETIC THEORY</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>Core</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Define the fundamental concepts of Wattless current, choke coil, transformer on no load- skin effect.	2,3	Remebering
<b>CO-2</b>	Explain the theorems related to ideal voltage source and current source.	1,3	Understand
<b>CO-3</b>	Explain the basics of Thermocouple effects	1,4	Understand
<b>CO-4</b>	Explain the Gauss's law, Poisson-Laplace's equations, Lorentz Force law, Biot- Savart law and Faraday's law	1,2	Understand
<b>CO-5</b>	Apply the principles of algebra and trigonometry to Gaussian surface and Amperian loop.	1,2	Applications
<b>CO-6</b>	Explain the Maxwell's equations, Continuity equations, Poynting's theorem and energy of electromagnetic waves	5	Understand

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH3A</b>			
<b>Title</b>	<b>INTRODUCTION TO COMPUTERS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, the students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Recall the characteristics of Computers, Evolution of computers and Generation of computers.	1,5	Remembering
<b>CO-2</b>	Classify different types of computers.	1,7	Analyze
<b>CO-3</b>	Elaborate the different input and output devices.	3	Create
<b>CO-4</b>	Categorize the memory devices and applications.	1,3	Analyze
<b>CO-5</b>	Outline the flowchart and write the pseudo code.	7	Understanding
<b>CO-6</b>	Interpret with operating system - windows XP.	6,7	Understanding
<b>CO-7</b>	Infer with applications such as www, Email, Video conferencing and different web browsers.	5,7	Understanding
<b>CO-8</b>	Relate different security trends and various security attacks.	3	Understanding

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH3B</b>			
<b>Title</b>	<b>RADIATION SAFETY</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Explain the theory of $\alpha$ , $\beta$ and $\gamma$ in radio activity.	1,5	Understanding
<b>CO-2</b>	Discuss the basic concepts of radiation detection and working principles of gas detectors.	3	Create
<b>CO-3</b>	Compute the half life time and mean life time of radioactive materials.	4	Evaluate
<b>CO-4</b>	Analyse the properties of elementary particles and their interactions.	1,7	Analyze
<b>CO-5</b>	Understand the interaction of photons by Photoelectric effect and Compton scattering.	5,7	Understanding
<b>CO-6</b>	Discuss the nuclear waste and disposal management.	5	Create
<b>CO-7</b>	Explain the application of nuclear techniques in MRI.	3	Understanding

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH3P1</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS -III</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>CORE</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand about the potential of low range voltmeter and ammeter.	PSO-3,4	Understanding
<b>CO-2</b>	Examine the diverse colors and wavelength determination using mercury spectrum by Oblique method.	PSO-3,4	Analyze
<b>CO-3</b>	Analyze the electrical parameters - resistance of the wire using metre bridge	PSO-1,7	Analyze
<b>CO-4</b>	Find the resonance frequency using LCR series and parallel circuits.	PSO-3	Remembering
<b>CO-5</b>	Apply the theoretical concepts of magnetism.	PSO-3	Application

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UNPH31</b>			
<b>Title</b>	<b>LASER PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>NME</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand about the potential of optical applications in different areas of research and development.	PSO-3,5	Understanding
<b>CO-2</b>	Determine the diverse applications of lasers and explore the control of laser properties.	PSO-4,7,6	Evaluate
<b>CO-3</b>	Apply the knowledge in designing optical techniques of Laser Sources & Detectors.	PSO-2,6	Application
<b>CO-4</b>	Understand the basic structure of optical fibre, their classification, propagation of light in them as well as the various losses that occur in them.	PSO-7	Understand
<b>CO-5</b>	Appraise the employability of students in optics/photronics industry.	PSO-1,8	Evaluate

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UAPH31</b>			
<b>Title</b>	<b>ALLIED PHYSICS - I</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>ALLIED</b>			
<b>Credits</b>	<b>3</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Analyze the basic concepts of elasticity	2,3	Analyze
<b>CO-2</b>	Discuss the important and fascinating areas in interference and diffraction with many experiments associated with it.	1,7	Create
<b>CO-3</b>	Distinguish between Fraunhofer and Fresnel diffractions	3	Analyze
<b>CO-4</b>	Apply the skills to find the wavelength of spectral lines using plane transmission grating.	3	Application
<b>CO-4</b>	Discuss the production and analysis of plane, circularly and elliptically polarized light.	5	Create
<b>CO-5</b>	Distinguish the halfwave and quarter wave plate.	3	Analyze
<b>CO-6</b>	Explain the theories of optical activity and specific rotation	1,7	Evaluate
<b>CO-7</b>	Illustrate the expression for mean free path and transport phenomena.	1,3	Understanding
<b>CO-8</b>	Explain the fundamental mode of heat transfer and its applications.	3	Evaluate
<b>CO-9</b>	Explain Stefan and Planck's Law.	2	Evaluate

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UAPH3P1</b>			
<b>Title</b>	<b>ALLIED PHYSICS PRACTICALS - I</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>III</b>		
<b>Type</b>	<b>ALLIED PRACTICAL</b>			
<b>Credits</b>	<b>1</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Make use of Pin and microscope to determine the elevation at the centre of a beam by uniform bending to calculate the Young's modulus.	4	Application
<b>CO-2</b>	Make use of Scale and telescope to determine depression at the centre of a beam by non-uniform bending to calculate the Young's modulus of a beam.	3,4	Application
<b>CO-3</b>	Construct circuits to verify Kirchoff's law.	2,4	Create
<b>CO-4</b>	Make use of spectrometer to measure the angle of diffraction in a grating by oblique incidence method to determine the wavelengths of various colours of the spectrum.	4	Application
<b>CO-5</b>	Utilize pin and microscope to measure the bandwidth of a fringe formed by air wedge to calculate the thickness of the wire.	3,4	Application
<b>CO-6</b>	Construct a LCR series circuit to study its frequency response curve.	4,5	Create
<b>CO-7</b>	Analyze the characteristics of a Zener diode under forward and reverse biased condition.	3,4	Analyze
<b>CO-8</b>	Calibrate a voltmeter using a potentiometer.	4	Application
<b>CO-9</b>	Construct basic logic gates using using diodes IN4001 and BC107 transistor.	4,5	Application

### Course Outcomes (CO)

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH41</b>			
<b>Title</b>	<b>LASER PHYSICS AND ITS APPLICATIONS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>IV</b>		
<b>Type</b>	<b>CORE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO Mapped</b>	<b>Cognitive level</b>
CO-1	Understand the potential of optics and its applications in different areas of research and development.	3,5	Understanding
CO-2	Recall the diverse applications of lasers and explore the control of laser properties.	4,7,6	Remembering
CO-3	Design various optical techniques of Laser Sources & Detectors.	2,6	Create
CO-4	Create the basic structure of Hologram, Construction and Reconstruction of hologram.	7	Creative
CO-5	Appraise the employability of students in optics/photronics industry.	1,8	Evaluate



**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCEPH4A</b>			
<b>Title</b>	<b>PROGRAMMING IN C++</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>IV</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO Mapped</b>	<b>Cognitive level</b>
<b>CO-1</b>	Outline the basic concepts of OOPs .	1,3	Understanding
<b>CO-2</b>	List out the tokens, data types and different operators used in C++ programming language.	5,6	Remembering
<b>CO-3</b>	Explain the conditional statements and loops.	4	Understanding
<b>CO-4</b>	Discuss the concepts of object, classes, constructors and destructors, operator overloading, inheritance, pointers and file handling.	3,4	Create
<b>CO-5</b>	Design OOPs concepts through C++ programs for solving simple problems (sorting, matrix addition and multiplication, fibonacci number, etc.).	5,7	Create

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCEPH4B</b>			
<b>Title</b>	<b>MATHEMATICAL PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>IV</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO Mapped</b>	<b>Cognitive level</b>
<b>CO-1</b>	Summarize the Vector operations in curvilinear Co-Ordinates.	1, 3	understanding
<b>CO-2</b>	Understand special functions to solve the Legendre and Hermite differential equations.	2,7	Understanding
<b>CO-3</b>	Analyse the Laplace and Fourier Transforms of Sine and Cosine functions.	2,6	Analyze
<b>CO-4</b>	Recall the concepts of Group symmetry of a equilateral triangle and equilateral square	1,7	Remembering
<b>CO-5</b>	Relate the characters of a representation with character tables for $C_{2V}$ & $C_{3V}$	3,6	Understanding

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UNPH41</b>			
<b>Title</b>	<b>APPLIED PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>IV</b>		
<b>Type</b>	<b>NME</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO Mapped</b>	<b>Cognitive level</b>
<b>CO-1</b>	Acquire the concepts and principles of conventional and non-conventional energy sources.	PSO-1,8	Remembering
<b>CO-2</b>	Understand the concepts of solar cell and environmental issues related to climate changes.	PSO-3,5	Understanding
<b>CO-3</b>	Describe the working of electric bell, electric fan and washing machine.	PSO-2,3	Understanding
<b>CO-4</b>	Analyse the properties of system of domestic wiring.	PSO-2,3	Analyze
<b>CO-5</b>	Understand the climate changes, global warming and its outcomes.	PSO-5,7	Understanding

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UAPH41</b>			
<b>Title</b>	<b>ALLIED PHYSICS-II</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>IV</b>		
<b>Type</b>	<b>ALLIED</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand the concept of relativity, Galilean and Lorentz transformation, deBroglie theory of matter waves.	1,3	Understand
<b>CO-2</b>	Describe the Nuclear structure, concept of Binding energy, Nuclear forces and Nuclear stability.	2,3	Understand
<b>CO-3</b>	Define charge, current, potential difference, resistance and resistivity, self inductance and mutual inductance.	2,5	Remembering
<b>CO-4</b>	Define Ohm's law and Kirchoff's law.	2	Remembering
<b>CO-4</b>	Construct LCR circuits in series and parallel.	4	Create
<b>CO-5</b>	Illustrate the working of semiconductor diode, zener diode, their characteristics .	3	Understand
<b>CO-6</b>	Describe the working of transistor, its characteristics and biasing.	3	Understand
<b>CO-7</b>	Construct of basic logic gates, NAND, NOR and EX-OR gates, Boolean equations, Binary adder, half adder and full adder.	2,4	Create

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UAPH4P1</b>			
<b>Title</b>	<b>ALLIED PHYSICS PRACTICALS -II</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>II</b>	<b>IV</b>		
<b>Type</b>	<b>ALLIED PRACTICAL</b>			
<b>Credits</b>	<b>1</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to :</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Make use of Pin and microscope to determine of depression of a cantilever to calculate the Youngs modulus of a beam.	3,4	Application
<b>CO-2</b>	Utilize a thermometer to determine the thermal conductivity of a bad conductor using Lee's disc.	4	Application
<b>CO-3</b>	Examine the characteristics of a transistor in common emitter mode.	2,4	Analyze
<b>CO-4</b>	Determine the rate of flow of a liquid through a capillary tube to find the viscosity of a liquid.	3,4	Evaluate
<b>CO-5</b>	Make use of spectrometer to measure the angle of diffraction in a grating by normal incidence method to determine the wavelengths of various colours of the spectrum.	3,4	Application
<b>CO-6</b>	Utilize a pin and microscope to measure the radius of curvature and hence to calculate the refractive index of the material of the lens.	3,5	Application
<b>CO-7</b>	Construct a LCR parallel circuit to study its frequency response curve.	1,4	Create
<b>CO-8</b>	Construct basic logic gates using NAND and NOR gates.	4,6	Create
<b>CO-9</b>	Calibrate an ammeter using a potentiometer.	4	Application

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH51</b>			
<b>Title</b>	<b>MODERN PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>THEORY</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>90</b>	<b>Hours/Week</b>	<b>6</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understanding the principles of nuclear atom and Electron orbits and thereby concluded the failure of classical physics	3	Understanding
<b>CO-2</b>	Explain Frank-Hertz experiment	3	Understanding
<b>CO-3</b>	Understand the dual nature of light and particle through Photoelectric effect , X-ray diffraction and Compton effect.	2,3	Understanding
<b>CO-4</b>	Illustrate wave and its phase and velocity using the concept of Debroglie	5	Understanding
<b>CO-5</b>	Determine the various properties of nucleus and the nuclear forces	2	Evaluating
<b>CO-6</b>	Discuss the concept of radioactivity and explain the theory of $\alpha$ , $\beta$ and $\gamma$ -decay in radioactivity	6	Creating
<b>CO-7</b>	Analyse different types of Nuclear reactors and compute the half life time of radioactive materials	5,7	Analysing
<b>CO-8</b>	Explain time dilation, length contraction and Doppler effect by	3	Understanding
<b>CO-9</b>	Formulate Einstein mass - energy relation	2	Creating

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH52</b>			
<b>Title</b>	<b>BASIC ELCTRONICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>THEORY</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>750</b>	<b>Hours/Week</b>	<b>5</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand the Characteristics of Transistor amplifier	PSO-5	Understanding
<b>CO-2</b>	Classify the transistor amplifiers based on coupling	PSO-5	Understanding
<b>CO-3</b>	Discuss various transistor amplifier circuits and analyse various types of power amplifiers	PSO-3	Creating
<b>CO-4</b>	Design simple oscillator circuits and Apply the concept of feedback in oscillatory circuits	PSO-3,5	Creating
<b>CO-5</b>	Demonstrate various oscillator circuits such as Hartley, Colpitt, phase shift and wein's bridge oscillator and Multivibrator circuits like Astable, Bistable and Monostable	PSO-3,5	Understanding
<b>CO-6</b>	Discuss the advantages of LEDs	PSO-7	Creating
<b>CO-7</b>	Analyse the different JFETS, their characteristics and their applications.	PSO-3	Analyzing
<b>CO-8</b>	Discuss the characteristics of Op-Amp and its applications	PSO-5	Creating

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH53</b>			
<b>Title</b>	<b>DIGITAL ELECTRONICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>THEORY</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>75</b>	<b>Hours/Week</b>	<b>5</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Explain about different number systems and their inter-conversion methods	PSO-5,7	Understanding
<b>CO-2</b>	Illustrate the basic logic operations of NOT, AND, OR, NAND, NOR, and XOR gates.	PSO-3,7	Understanding
<b>CO-3</b>	Utilize Boolean algebra expressions including Karnaugh maps to build Truth Tables.	PSO-5,7	Applying
<b>CO-4</b>	Understand the working of Multiplexers and Demultiplexers	PSO-5	Understanding
<b>CO-5</b>	Describe the functionality of clock circuits and Flip flops for different decoders.	PSO-3,7	Understanding
<b>CO-6</b>	Classify the Flip Flops into various types.	PSO-5	Understanding
<b>CO-7</b>	Explain the working of different types of Register and Counters	PSO-3	Understanding
<b>CO-8</b>	Design D/A and A/D converters and verify their applications in various circuits.	PSO-5	Creating
<b>CO-9</b>	Describe the functionality of clock circuits and Flip flops for different decoders.	PSO-3	Understanding



<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH5B</b>			
<b>Title</b>	<b>MICROPROCESSOR AND PROGRAMMING</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Development of microprocessor, summarize the features of 8-bit microprocessor	1,3,10	Understanding
<b>CO-2</b>	Recall the addressing modes and instruction sets of 8085 microprocessor	4,5	Understanding
<b>CO-3</b>	Explain the architecture of 8085 microcontroller	2	Evaluating
<b>CO-4</b>	Evaluate the addressing modes and instruction set of 8085 microcontroller	2	Evaluating
<b>CO-5</b>	Apply the assembly language programs in basic mathematical operators	6,9	Analyzing, applying
<b>CO-6</b>	Discuss the scheme of interfacing	1,6	Creating

### Course Outcomes (CO)

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH5A</b>			
<b>Title</b>	<b>INTRODUCTION TO NANOTECHNOLOGY</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand various methods of synthesis of nanomaterials	PSO-6	Understanding
<b>CO-2</b>	Analyze the nano materials by characterization techniques	PSO-4	Analyzing
<b>CO-3</b>	Discuss various applications of quantum dots, nanocrystals	PSO-3	Creating
<b>CO-4</b>	Understand fullerenes and carbon nanotubes	PSO-5	Understanding
<b>CO-5</b>	Apply nanotechnology to medicine and biology	PSO-3	Applying
<b>CO-6</b>	Apply nanotechnology to environmental implications such as pollution prevention, water purification and water desalination etc.,	PSO-3,5	Applying

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH5P1</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS – V</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>PRACTICALS</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Determine the Cauchy's constants of a material of a prism	PSO-4	Evaluating
<b>CO-2</b>	Analyse the variation of the thermo-emf across two junctions of a thermo-couple	PSO-4	Analyzing
<b>CO-3</b>	Compare mutual inductances between different pairs of coils	PSO-4	Understanding
<b>CO-4</b>	Design a circuit and Convert the Galvanometer into voltmeter and ammeter	PSO-4	Creating
<b>CO-5</b>	Measure the Planck's Constant using Blackbody radiation.	PSO-4	Evaluating
<b>CO-6</b>	Construct a circuit to calibrate the high range voltmeter into a Potentiometer	PSO-4	Applying
<b>CO-7</b>	Find the Figure of Merit or Charge Sensitiveness of a BG	PSO-4	Remembering
<b>CO-8</b>	Make use of spectrometer to calculate the refractive index of the material of the given prism	PSO-4	Applying
<b>CO-9</b>	Determine the wavelength of sodium light using Fresnel Bi-prism.	PSO-4	Evaluating
<b>CO-10</b>	Determine the self inductance of the coil using Owen's Bridge.	PSO-4	Evaluating

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH5P2</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS – VI</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>PRACTICALS</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Examine the characteristics of FET	PSO-4	Analyzing
<b>CO-2</b>	Construct Zener regulated power supply	PSO-4	Creating
<b>CO-3</b>	Construct adder and subtractor using Op-amp	PSO-4	Creating
<b>CO-4</b>	Make use of IC's to construct half adder and full adder	PSO-4	Applying
<b>CO-5</b>	Design and verify AND, OR, EX-OR gates using NAND gates	PSO-4	Creating
<b>CO-6</b>	Examine the characteristics of photovoltaic cell and photo transistor	PSO-4	Analyzing
<b>CO-7</b>	Make use of IC 555 to construct an astable multivibrator	PSO-4	Applying
<b>CO-8</b>	Construct a single stage amplifier without feedback	PSO-4	Creating
<b>CO-9</b>	Construct a Colpitt's Oscillator	PSO-4	Creating

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18USPH51</b>			
<b>Title</b>	<b>MEDICAL PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>V</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>30</b>	<b>Hours/Week</b>	<b>2</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand the nature of cancer cells	PSO-6	Understanding
<b>CO-2</b>	Explain the human physiological systems	PSO-6	Understanding
<b>CO-3</b>	Explain the bioelectric recording systems (ECG, EEG, EMG, ENG)	PSO-5	Understanding
<b>CO-4</b>	Infer with applications such as ultrasonic blood flow meter, gas analyzer, pH meter etc.,	PSO-3	Understanding
<b>CO-5</b>	Analyze the interaction of radiation with matter Compton and Photoelectric effect	PSO-2	Analyzing
<b>CO-6</b>	Understand the concepts of radiation exposure, effective dose, inverse square law	PSO-6	Remembering
<b>CO-7</b>	Outline the basic concepts of X-ray machine, Radio graphic and fluoroscopic techniques	PSO-3,6	Understanding
<b>CO-8</b>	Discuss the concepts of computer tomography, MRI, Ultrasonography, Endoscopy, Thermography	PSO-3,6	Creating
<b>CO-9</b>	Explain the medical application of thermography	PSO-3,6	Applying
<b>CO-10</b>	Explain the different types of biometry systems and patient monitoring	PSO-3,5,6	Understanding

**Semester VI****Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH61</b>			
<b>Title</b>	<b>QUANTUM MECHANICS AND STATISTICAL MECHANICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>CORE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Interpret the wave function to understand symmetric and asymmetric types.	PSO-5	Understanding
<b>CO-2</b>	Apply the fundamental postulates of Quantum Mechanics to derive Schrodinger's time dependent and independent wave equations	PSO-3	Applying
<b>CO-3</b>	Identify different operators with their eigen values and eigen functions	PSO-5	Applying
<b>CO-4</b>	Analyze quantum mechanical system by finding eigenvalues and eigenvectors.	PSO-5	Analysing
<b>CO-5</b>	Solve the Schrodinger equation for a particle in a box and square potential barrier	PSO-3	Applying
<b>CO-6</b>	Understand the fundamental postulates of statistical mechanics and to apply them in different statistics such as Maxwell Boltzmann, B-E & F-D statistics.	PSO-5	Understanding
<b>CO-7</b>	Classify and compare the ensembles and study their uses	PSO-3	Understanding
<b>CO-8</b>	Relate the thermodynamic quantities	PSO-3,5	Understanding

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH62</b>			
<b>Title</b>	<b>SOLID STATE PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>CORE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Explain the structure of crystals by knowing the crystal lattice and lattice parameters	PSO-5	Understanding
<b>CO-2</b>	Classify the crystals into different types based on the structure	PSO-6	Understanding
<b>CO-3</b>	List the crystal imperfections using Bragg's X-ray spectrometer and different crystal methods	PSO-3	Analysing
<b>CO-4</b>	Analyse the effect of electric polarization, their types and impact of temperature on polarization	PSO-5	Analysing
<b>CO-5</b>	Describe Clausius - Mosotti relation and its use to determine dielectric constants for dielectric materials and ferroelectric materials	PSO-3	Understanding
<b>CO-6</b>	Classify the magnetic materials based on Langevin's theory, Weiss's theory and Quantum theory	PSO-5	Understanding
<b>CO-7</b>	Compare the properties of Ferromagnetic and Anti Ferromagnetic materials	PSO-5	Understanding
<b>CO-8</b>	Explain the properties and different types ( I & II )of super conductors	PSO-3	Understanding
<b>CO-9</b>	Explain the BCS theory and Derive the London's Equation	PSO-5	Understanding
<b>CO-10</b>	Find the applications of super conducting materials in different fields	PSO-3	Remebering

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH6A</b>			
<b>Title</b>	<b>COMMUNICATION ELECTRONICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Understand the modes of data transfer and types of analog, Digital A.C and D.C signals	PSO-5	Understanding
<b>CO-2</b>	Explain the characteristics of data transmission circuits	PSO-3	Understanding
<b>CO-3</b>	Understand the different types of digital codes	PSO-5	Understanding
<b>CO-4</b>	Describe the need of modem and its functioning WAN,MAN and LAN	PSO-7	Understanding
<b>CO-5</b>	Explain about M/W links and repeaters	PSO-5	Understanding
<b>CO-6</b>	Elaborate the construction of satellites,its working and its role in communication.	PSO-3,5	Creating
<b>CO-7</b>	Outline the principle of Radar systems and their types	PSO-3	Understanding
<b>CO-8</b>	Illustrate the structure of fiber and its characteristics	PSO-5	Understanding
<b>CO-9</b>	Identify the sources and detectors for the optical fiber communication system	PSO-3,6	Applying
<b>CO-10</b>	Classify the types of splicing	PSO-5	Understanding



<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UEPH6B</b>			
<b>Title</b>	<b>NUMERICAL METHODS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>4</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Solve numerical algebraic and transcendental equations	PSO-4,5	Creating
<b>CO-2</b>	Solve the equation using numerical differentiation and integration techniques	PSO-4,5	Creating
<b>CO-3</b>	Interpret the importance of Interpolation by various methods	PSO-2	Evaluating
<b>CO-4</b>	Estimate the numerical solution of partial differential equations	PSO-4	Evaluating
<b>CO-5</b>	Solve simultaneous linear equations by various methods Gauss elimination method, Gauss Jacobi, Gauss-Seidal method, Gauss-Jordan modification		Applying

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH6P1</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS – VII</b>			
<b>AA Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>PRACTICALS</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Determine the Hartmann's Constants using spectrometer	PSO-4	Evaluating
<b>CO-2</b>	Make use of 'i-i' curve to calculate Refractive index of the material of the prism using 'i-i' curve	PSO-4	Applying
<b>CO-3</b>	Find the value of Young's Modulus of the Plastic material by forming Elliptical Fringes	PSO-4	Remembering
<b>CO-4</b>	Estimate the wavelength of Laser Light using Diffraction of single slit.	PSO-4	Evaluating
<b>CO-5</b>	Design circuits to verify the Thevenin's and Norton's theorems	PSO-4	Creating
<b>CO-6</b>	Measure the Hysteresis Loss of Ferrite specimen using CRO	PSO-4	Evaluating
<b>CO-7</b>	Determine the value of the capacitance using Desauty's Bridge	PSO-4	Evaluating
<b>CO-8</b>	Estimate the value of electrochemical equivalent of copper.	PSO-4	Creating
<b>CO-9</b>	Determine the Self inductance of the coil by Rayleigh's method	PSO-4	Evaluating
<b>CO-10</b>	Find out the value of High Resistance by Leakage method.	PSO-4	Remembering

**Course Outcomes (CO)**

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18UCPH6P2</b>			
<b>Title</b>	<b>PHYSICS PRACTICALS – VIII</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>PRACTICALS</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Examine the characteristics of Op Amp, LED, Light Dependent Resistance.	PSO-4	Analyzing
<b>CO-2</b>	Construct IC regulated dual power supply.	PSO-4	Creating
<b>CO-3</b>	Construct integrator and differentiator using Op-amp.	PSO-4	Creating
<b>CO-4</b>	Construct Wein's bridge oscillator using Op-amp.	PSO-4	Creating
<b>CO-5</b>	Design and verify AND, OR, EX-OR gates using NOR gates.	PSO-4	Creating
<b>CO-6</b>	Make use of IC 555 to construct a monostable multivibrator.	PSO-4	Applying
<b>CO-7</b>	Construct and study the response of single stage amplifier with feedback.	PSO-4	Creating
<b>CO-8</b>	Construct a Hartley Oscillator.	PSO-4	Creating

<b>Course</b>	<b>UG</b>			
<b>Code</b>	<b>18USPH61</b>			
<b>Title</b>	<b>ENERGY PHYSICS</b>			
<b>Degree</b>	<b>B.Sc.</b>			
<b>Branch(s)</b>	<b>Physics</b>			
<b>Year/Semester</b>	<b>III</b>	<b>VI</b>		
<b>Type</b>	<b>ELECTIVE</b>			
<b>Credits</b>	<b>2</b>			
<b>No. of Contact Hours</b>	<b>Total Hours</b>	<b>60</b>	<b>Hours/Week</b>	<b>4</b>

<b>CO No.</b>	<b>Upon completion of this course, students will be able to:</b>	<b>PSO addressed</b>	<b>Cognitive level</b>
<b>CO-1</b>	Compare the conventional energy sources, their prospects and limitations with renewable ones	PSO-5	Understanding
<b>CO-2</b>	Assess the availability of sources such as Coal, Oil and Petrol and their merits and demerits	PSO-5	Evaluating
<b>CO-3</b>	Summarize the use of solar energy and the various components used in the energy production.	PSO-3,5	Understanding
<b>CO-4</b>	Recall the concepts of Photosynthesis and biogas generation.	PSO-3	Remembering
<b>CO-5</b>	Explain the features of geothermal energy.	PSO-5	Understanding
<b>CO-6</b>	List the types of wind machines and advantages and disadvantages of wind energy	PSO-3,5	Analyzing