

B.Sc. Physics Honours**6 Semester Course****List of Courses**

Sl No	Name of the Course	Semester	Course Code	Credit	Marks in the Course	Name of the Programme	Programme Code	Course outcome	Employability/Skill enhancement / Entrepreneurship development	Introducti on year of new course	BoS Date	Percentag e of Revision	BoS Date
1	Mathematical Methods-I Mechanics – I Vibration Geometrical Optics	1	PHSA-P1-T	14	100	B.Sc. Physics Hons	PHSA	In mathematical methods, basic understanding of Vector analysis, ordinary and partial differential equations, Fourier series are learnt. In mechanics, Newtonian, mechanics related physics is learnt. In vibration & waves, SHM, damped and forced oscillations, general properties of waves (acoustics and stationary) are learnt.	The course focuses to develop the basic knowledge in physics. The basic knowledge and conception is essential to understand the higher level physics and engineering. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students. To enhance the knowledge we conduct regular class test and assignment. Also we encourage students for questions related to topic and interact with teachers beyond class hours.				

2	Mathematical Methods-II Mechanics – II General Properties of Matter Waves and Physical Optics	2	PHSA-P2-T	10	100	B.Sc. Physics Hons	PHSA	In mathematical methods, basic understandings of Linear vector space, Matrix-Tensor and some special functions, partial differential equations are learnt. In mechanics, many particles problem, rotational and rigid body motions are learnt. General Properties of matter (GPM) where the basic principles of elasticity, viscosity and surface tension are learnt. In optics, geometrical and physical optics including interference, diffraction and polarization are learnt.	The course focuses to develop the basic knowledge in mathematics, mechanics, GPM and physical optics. The basic knowledge and conception about those topics are essential to understand the higher level physics and engineering. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students. To enhance the knowledge we conduct regular class test and assignment. Also we encourage students for questions related to topic and oral presentation of selected topic.				
3	General Properties of Matter, Wave & Acoustics, Heat, Geometrical Optics, Electricity & Electronics	2	PHSA-P2-p	4	50	B.Sc. Physics Hons	PHSA	Different experimental skills related to mechanics, general properties of mater, basic electronics and optics are developed.	Very basic instruments handling capabilities are developed. That knowledge is essential for the experiments in higher physics. We conduct regular assessment and viva on experiment performed by the student.				

4	Electrostatics Current Electricity & Magnetism Thermal Physics – I	3	PHSA-P3-T	14	100	B.Sc. Physics Hons	PHSA	In Electrostatics and Current Electricity & Magnetism part, the basic knowledge of electrostatics, current electricity, magneto statics, and preliminary electromagnetic theory are learnt. In heat and thermodynamics the basic laws of kinetic theory, thermodynamics and radiation are learnt.	Basic knowledge of electrostatics, electricity, magnetism is essential to realize the higher physics. The basic knowledge in thermal physics is the building block to understand the physics of material at higher level. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students. We conduct regular class test and assignment to enhance the understandings of the student. Also we encourage students to ask questions and involve in interaction in class so they gain interest and success in job oriented examinations.				
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5	Alternating Current & Electronics Thermal Physics – II	4	PHSA-P4-T	10	100	B.Sc. Physics Hons	PHSA	In Electronics part, analog and digital electronics and basic communication electronics are learnt. In Thermal Physics, thermodynamics related topics are learnt.	The advance knowledge in alternating current, analog electronics and digital electronics is essential and important to understand the modern day's development of devices and technology. The basic knowledge in thermal physics is the building block to understand the physics of material at higher level. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students. Students are encouraged to develop models on electronics as project work. We conduct regular class test and assignment to gain interest in problem solving and subject. Also we encourage students to conquer questions and involve in interaction to gain confidence to face competitive examinations.					
6	General Properties of Matter, Heat, Magnetism Physical Optics, Electricity & Electronics. Computer programing & Numerical Analysis	4	PHSA-P4-P	4	100	B.Sc. Physics Hons	PHSA	General practical skills are developed in this course. The skill of construction of amplifier, oscillator, power supply etc. in electronics are developed. Also the measurement of conductivity of bad conductor is done. The computer practical build the programming skills of students.	The working experiences with the electrical and electronics circuits and optical instruments are essential for the higher level experiment in physics. The practical knowledge of circuit construction of basic building block of electronic devices is developed. We conduct regular assessment and viva on experiment performed by the student to enhance their knowledge and gain confidence to face competitive examinations.					40 22.12.2014

7	Mechanics – III Special Theory of Relativity Quantum Mechanics Atomic Physics & Laser	5	PHSA-P5-T	16	100	B.Sc. Physics Hons	PHSA	In mechanics, many particles problem, rotational and rigid body motions are learnt. In Special Theory of Relativity, basic knowledge of relativity, space-time and light cone are learnt. Quantum Mechanics is introduced up to hydrogen atom problem. In Atomic Physics and Laser, the spectroscopic behaviour of atomic transitions are learnt.	The advance knowledge of theoretical physics is introduced here. The knowledge of those topics is essential for higher level studies and research. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students. To enhance the knowledge we conduct regular class test and assignment. Also we encourage students for questions related to topic, class interaction with teachers and oral presentation of selected topic to develop their problem solving skills.				
8	Electromagnetic Theory	5	PHSA-P6-T	10	50	B.Sc. Physics Hons	PHSA	The advance level theory of electromagnetic phenomena is learnt.	The advance knowledge of Electromagnetic Theory is essential for higher level studies and research. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students.				

9	Nuclear Physics & Particle Physics, Statistical Physics Project	6	PHSA-P7-T	9 (8+1)	100	B.Sc. Physics Hons	PHSA	In Nuclear and Particle Physics, the properties of nucleus and its energetics, different nuclear models and the detectors & accelerators, interaction of nuclear radiation with matter and particles itself are learnt. In Statistical Physics, classical and quantum statistics are learnt. In project part, students get flavour of research in physics.	Development of knowledge of nuclear and particle physics which is future energy source and can fulfil the daily human energy requirements. The understanding of nuclear reactors and the stellar energy source with evolution of universe. The knowledge of statistical physics is very important to understand the physics of matter. Theoretical and practical skills related to research are developed through different project works. The content of course is also important to qualify the NET, SET and other job oriented examinations for Physics Honours students. Students are encouraged to develop research methodology as project work. We conduct regular assignment to gain interest in problem solving and subject. Also we encourage students to conquer questions and involve in interaction to motivate for competitive examinations.				
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13	General Properties of Matter Geometrical Optics Waves and Vibrations	1	PHSG-P1-T	3	50	B.Sc. Physics Hons	PHSA	General Properties of matter (GPM) where the basic principles of elasticity, viscosity and surface tension are learnt. In Geometrical Optics Fermat's principle and related topics along with different types of aberrations and optical instrument is learnt.	The basic reason behind the different properties of matter and their applicability in daily life and industrial instruments are expected to learnt in GPM. The knowledge of geometrical optics is essential for the manufacturing or different optical instruments like microscope, telescope, camera, spectrometer, spectrophotometer etc. The study of wave motion is essential to understand the modern day's communication. The content of course is important to qualify different examinations (e.g., School service, Clerical job etc.) for the Physics General students. We encourage students for questions related to topic and interact with teachers within and beyond class hours.				
14	Heat and Thermodynamics Vector and Electricity	2	PHSG-P2-T	2	50	B.Sc. Physics Hons	PHSA	In heat and thermodynamics the basic laws of kinetic theory, thermodynamics and radiation are learnt. In electricity the basic concept and laws of electrostatics, magneto statics, electric current are learnt.	The basic knowledge of heat and thermodynamics is the building block to understand the physics of material at higher level. The basic knowledge of electricity is essential for understanding modern day's electrical devices. The course is important to qualify different examinations (e.g., School service, Clerical job etc.) for the Physics General students. We encourage students for questions related to topic and interact with teachers within and beyond class hours.				

15	General Properties of Matter, Wave & Acoustics, Heat, Geometrical Optics, Electricity & Electronics.	2	PHSG-P2-P	1	50	B.Sc. Physics Hons	PHSA	Different experimental skills related to Wave & Acoustics, general properties of mater, basic electronics optics and heat are developed.	Different experimental skills related to electricity, heat and general properties of matter are developed.Very basic instruments handling capabilities are developed. Measurement of different physical quantities is useful in realizing the physics in daily life. We conduct regular assessment and viva on experiment performed by the student.				
16	Mechanics Physical Optics	3	PHSG-P3-T	3	50	B.Sc. Physics Hons	PHSA	In Mechanics the students are expected to learn the physics of system of particles, rotational motion, rigid body motion and the motion of a particle under central force. The basic physics behind the simple harmonic motion and wave motion are also learnt. In Physical Optics the basic phenomenon of interference, diffraction and polarisation are learnt.	Development of knowledge and problem solving skills are developed in vector algebra and Newtonian Mechanics.The knowledge of motion of rigid body and related topics are essential for understanding the physical world of science and engineering. The knowledge of central force is necessary to understand the planetary motion of planets and satellites. The study of physical optics helps to know the nature of light. The course is important to qualify different examinations (e.g., School service, Clerical job etc.) for the Physics General students. We encourage students for questions related to topic and assignment to improve their knowledge.				

