B.Sc. Physics Honours

6 Semester Course

List of Courses

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

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

4 Elec	ctrostatics	3	PHSA-P3-T	14	100	B.Sc. Physics	PHSA	In Electrostatics and Current	Basic knowledge of electrostatics,			
Cur	rrent Electricity &					Hons		Electricity & Magnetism part,	electricity, magnetism is essential to			
Mag	gnetism							the basic knowledge of	realize the higher physics. The basic			
The	ermal Physics – I							electrostatics, current	knowledge in thermal physics is the			
								electricity, magneto statics,	building block to understand the			
								and preliminary	physics of material at higher level.			
								electromagnetic theory are	The content of course is also			
								learnt. In heat and	important to qualify the NET, SET			
								thermodynamics the basic	and other job oriented examinations			
								laws of kinetic theory,	for Physics Honours students. We			
								thermodynamics and	conduct regular class test and			
								radiation are learnt.	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.			

5	Alternating Current &	4	PHSA-P4-T	10	100	B.Sc. Physics	PHSA	In Electronics part, analog and	The advance knowledge in			
	Electronics					Hons		digital electronics and basic	alternating current, analog			
	Thermal Physics – II							communication electronics	electronics and digital electronics is			
								are learnt. In Thermal Physics,	essential and important to			
								thermodynamics related	understand the modern day's			
								topics are learnt.	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.			
											40	22.12.2014
6	General Properties	4	PHSA-P4-P	4	100	B.Sc. Physics	PHSA	General practical skills are	The working experiences with the			
	of Matter,					Hons		developed in this course. The	electrical and electronics circuits and			
	Heat, Magnetism							skill of construction of	optical instruments are essential for			
	Physical Optics,							amplifier, oscillator, power	the higher level experiment in			
	Electricity							supply etc. in electronics are	physics. The practical knowledge of			
	& Electronics.							developed. Also the	circuit construction of basic building			
	Computer							measurement of conductivity	block of electronic devices is			
	programing							of bad conductor is done. The	developed. We conduct regular			
	& Numerical							computer practical build the	assessment and viva on experiment			
	Analysis							programming skills of	performed by the student to			
								students.	enhance their knowledge and gain			
									confidence to face competitive			
									examinations.			

7 Mechanics – III	5	PHSA-P5-T	16	100	B.Sc. Physics	PHSA	In mechanics, many particles	The advance knowledge of			
Special Theory of					Hons		problem, rotational and rigid	theoretical physics is introduced			
Relativity							body motions are learnt. In	here. The knowledge of those topics			
Quantum Mechanics							Special Theory of Relativity,	is essential for higher level studies			
Atomic Physics &							basic knowledge of relativity,	and research. The content of course			
Laser							space-time and light cone are	is also important to qualify the NET,			
							learnt. Quantum Mechanics is	SET and other job oriented			
							introduced up to hydrogen	examinations for Physics Honours			
							atom problem. In Atomic	students. To enhance the knowledge			
							Physics and Laser, the	we conduct regular class test and			
							spectroscopic behaviour of	assignment. Also we encourage			
							atomic transitions are learnt.	students for questions related to			
								topic, class interaction with teachers			
								and oral presentation of selected			
								topic to develop their problem			
								solving skills.			
8 Electromagnetic	5	PHSA-P6-T	10	50	B.Sc. Physics	PHSA	The advance level theory of	The advance knowledge of			
Theory					Hons		electromagnetic phenomena	Electromagnetic Theory is essential			
							is learnt.	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.			
										40	16.05.2015

9 Nuclear Physics &	6 PHSA-P7-T	9 (8+1)	100	B.Sc. Physics	PHSA	In Nuclear and Particle	Development of knowledge of			
Particle				Hons		Physics, the properties of	nuclear and particle physics which is			
Physics, Statistical						nucleus and its energetics,	future energy source and can fulfil			
Physics						different nuclear models and	the daily human energy			
Project						the detectors & accelerators,	requirements. The understanding of			
						interaction of nuclear	nuclear reactors and the stellar			
						radiation with matter and	energy source with evolution of			
						particles itself are learnt. In	universe. The knowledge of statistical			
						Statistical Physics, classical	physics is very important to			
						and quantum statistics are	understand the physics of			
						learnt. In project part,	matter. Theoretical and practical			
						students get flavour of	skills related to research are			
						research in physics.	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.			
									35	16.05.2015

10 Solid State Physics	6 PHSA-P8-T	4 50	B.Sc. Physics Hons	PHSA	Different theoretical development and calculations are introduced to study the behaviour of solids.	The basic knowledge of Crystal Structure and properties of material is essential to study the higher level Physics and technologies . The content of course is also important to qualify the NET, SET and other job oriented examinations for UG and PG students. We encourage students for questions related to topic and oral presentation and group discussion on selected topic to motivate for competitive examinations.		30	16.05.2015
11 Non-electronics, Electronics	6 PHSA-P9-P	9 100	B.Sc. Physics Hons	PHSA	Important physical constants/quantities like e/m, hall coefficient, bandgap energy of a solid, hysteresis loss etc. are measured. Also, the skill of design and fabrication of advance electronics circuits are developed.	Advance level instruments are used to measure the physical quantities. That gives a test of research work to the students. The development of skill to design and construct advance electronics circuits is helpful in future research work. We conduct regular assessment and viva on experiment performed by the student.			10.05.2015
12 Optics	6 PHSA-P10-P	4 50	B.Sc. Physics Hons	PHSA	The use of advance optical instruments is learnt.	The development of skill to use advance and sophisticated optical instruments are helpful in future research work. We conduct regular assessment and viva on experiment performed by the student to enhance their knowledge and gain confidence to face competitive examinations.			

13 General Properties of 1 PHSG-P1-T 3 50	B.Sc. Physics PHSA	A General Properties of matter	The basic reason behind the		
Matter	Hons	(GPM) where the basic	different properties of matter and		
Geometrical Optics		principles of elasticity,	their applicability in daily life and		
Waves and Vibrations		viscosity and surface tension	industrial instruments are expected		
		are learnt. In Geometrical	to learnt in GPM. The knowledge of		
		Optics Fermat's principle and	geometrical optics is essential for		
		related topics along with	the manufacturing or different		
		different types of aberrations	optical instruments like microscope,		
		and optical instrument is	telescope, camera, spectrometer,		
		learnt.	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, Clerkical 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 2 PHSG-P2-T 2 50	B.Sc. Physics PHSA	A In heat and thermodynamics	The basic knowledge of heat and		
Thermodynamics	Hons	the basic laws of kinetic	thermodynamics is the building		
Vector and Electricity		theory, thermodynamics and	block to understand the physics of		
		radiation are learnt. In	material at higher level. The basic		
		electricity the basic concept	knowledge of electricity is essential		
		and laws of electrostatics,	for understanding modern day's		
		magneto statics, electric	electrical devices. The course is		
		current are learnt.	important to qualify different		
			examinations (e.g., School service,		
			Clerkical 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, Clerkical job etc.) for the Physics General students. We encourage students for questions related to topic and assignment to improve their knowledge.		

17	Electronics	4	PHSG-P4-T	2	50	B.Sc. Physics	PHSA	In electronics the basic of	The basic knowledge of electronics is			
	Modern Physics					Hons		analog and digital electronics	essential to understand the modern			
								are learnt. In modern physics	day electronic devices and			
								very basic of some advanced	communication. The basic concept			
								topics like Special Theory of	of Modern Physics gives some ideas			
								Relativity, Quantum	of some recent topics developed in			
								Mechanics, Solid State Physics	physics. The course is important to			
								and Nuclear Physics are	qualify different examinations (e.g.,			
								learnt.	School service, Clerkical job etc.) for			
									the Physics General students. We			
									encourage students for questions			
									related to topic and assignment to			
									improve their knowledge.			
											30	22.12.2014
18	General Properties of	4	PHSG-P4-P	1	50	B.Sc. Physics	PHSA	Students get the opportunity	Different experimental skills related			
	Matter, Heat,					Hons		to do some experiments on	to heat, electricity, magnestism,			
	Magnetism,							General Properties of Matter,	electronics and optics are			
	Physical Optics,							Heat, Magnetism, Physical	developed. We conduct regular			
	Electricity &							Optics, Electricity &	assessment and viva on experiment			
	Electronics							Electronics.	performed by the student.			