SSPHYSICS (HONS.) 2018-19									
SEMESTER – I July 18 – November 18									
Paper	**Core Course - 1**	**No of Lectures**	**Faculty**	**Paper**	**Core Course - 2**	**No of Lectures**	**Faculty**	**Internal Assessment (by College)**	**Parent Teacher Meeting**
PHS-A-CC-1-1TH	**Mathematical Physics I**	60		**PHS-A-CC-1-2TH**	**Mechanics (Theory)**	60		3rd week of November	1st week of December
	1. Calculus	15	GDP		1. Fundamentals of Dynamics	10	BC		
	2. Vector Algebra and Vector Calculus	15	GDP		2. Work and Energy	10	BC		
	3. Orthogonal Curvilinear Coordinates	15	SDR		3. Gravitation and Central Force Motion	10	FK		
	4. Matrices	15	SD		4. Non-Inertial Systems	05	SN		
					5. Rotational Dynamics	10	SN		
					6. Elasticity	05	FK		
					7. Fluid Motion	10	SD		
PHS-A-CC-1-1P	**Mathematical Physics - I (Practical)**	60		**PHS-A-CC-1-2P**	**Mechanics (Practical)**	60	BC & GDP	3rd week of November	1st week of December
	1. Introduction and Overview	05	GDP		1.Moment of Inertia & Modulus of Rigidity				
	2. Basics of scientific computing	05	GDP		2. Moment of Inertia of a Flywheel				
	3. Errors and error Analysis	05	GDP		**3.**Coeficient of Viscosity of water by Capillary Flow Method**.**				
	4. Introduction to plotting graphs with Gnuplot / QtiPlot (or some other GUI based free software like Grace, Origin etc.)	05	SN		4. Young's modulus of the material of a beam by the method of _exure.				
	5. Introduction to programming in python:	05	SN		5. Elastic constants of a material by Searle's method.				
	6. Programs	35	SN		6. The value of g using Bar Pendulum.				
			SN		7. The height of a building using sextant.				

PHYSICS (HONS.) 2018-19									
SEMESTER – II January 19 – June 19									
Paper	**Core Course - 3**	**No of Lectures**	**Faculty**	**Paper**	**Core Course - 4**	**No of Lectures**	**Faculty**	**Internal Assessment (by College)**	**Parent Teacher Meeting**
PHS-A-CC-2-3TH	**Electricity and Magnetism (Theory)**	60		**PHS-A-CC-2-4 TH**	**Waves and Optics (Theory)**	60			
	1. Electrostatic Field	10	SN		1. Oscillations	05	BC		
	2. Dielectric properties of matter	10	SN		2. Superposition of Harmonic Oscillations	10	BC		
	3. The Magnetostatic Field	10	GL		3. Wave motion	05	BC		
	4. Magnetic properties of matter	10	GL		4. Velocity of Waves	05	GL	3rd week of May	1st week of June
	5. Electro-magnetic induction	10	GDP		5. Superposition of Harmonic Waves	10	GL		
	6. Electrical circuits	05	GDP		6. Wave optics	05	PS		
	7. Network theorems	05	GDP		7. Interference	05	PS		
					8. Interferometers	05	PS		
					9. Diffraction and Holography	10	GL		
PHS-A-CC-2-3P	**Electricity and Magnetism (Practical)**	60	SN & GDP	**PHS-A-CC-2-4P**	**Waves and Optics (Practical)**	60	BC & GDP	3rd week of May	1st week of June
	1.determination of an unknown Low R using Potentiometer				1. Melde's experiment				
	2.determination of an unknown Low R using Carey Foster's Bridge				2.Determination of refractive index of the Material of a prism using sodium source				
	3. Verification of the Thevenin and Norton theorems				**3.**Determination of the dispersive power and Cauchy constants of the material of a prism using mercury source				
	4. Verification of Superposition, and Maximum power transfer theorems				4.Determination of wavelength of sodium light using Fresnel Biprism				

	5. To study response curve of a Series LCR circuit				5.Determination of wavelength of sodium light using Newton's Rings				
	6. To study the characteristics of a series RC Circuit				6.Determination of the thickness of a thin paper by a wedge-shaped Film				
	7. Determination of horizontal component of the earths magnetic field				7.Determination of the spacing between the adjacent slits in a grating by measuring sinθvsλgraph of a certain order of grating spectra				

PHYSICS (HONS.) 2018-19									
Paper	**First Term July 18 – Oct 18**	**No of Lectures**	**Faculty**	**Second Term Nov 18 – Jan 19**	**No of Lectures**	**Faculty**	**Third Term Feb 19 - June 19**	**No of Lectures**	**Faculty**
III	**Unit-I**			**Unit-I**			**Unit-I**		
	1. Electronics II	10		**1. Electronics II**	13		**1. Electronics II**	07	
	i) Amplifier	05	BC	iii) OP-AMP	05	BC	v) Sequential logic	03	BC
	ii) Oscillators	05	BC	iv) Combinational logic	05	BC	vi) Communication principle	04	BC
				v) Sequential logic	03	BC			
	2. Electricity and Magnetism	11		**2. Electricity and Magnetism**	10		**2. Electricity and Magnetism**	09	
	i) Magnetic effect of steady current	11	SD	ii) Field and Magnetic material	10	SD	iii) Electromagnetic induction	09	SD
	Unit-II			**Unit-II**			**Unit-II**		
	1. Electrostatics	11		**1. Electrostatics**	14		**1. Electrostatics**	04	
	i) Units and dimensions	03	SDR	iii) Multipole expansion	07	SDR	v) Electrical image	04	SDR
	ii) Gauss' law	08	SDR	iv) Dielectrics	07	SDR			
	2. Wave and Optics	10		**2. Wave and Optics**	12		**2. Wave and Optics**	08	
	i) Interference of light waves	10	BC	ii) Diffraction of light waves	12	SD	iii) Polarization	08	SD
IVA	**Unit-I**			**Unit-I**			**Unit-I**		
	1. Quantum Mechanics I	10		**1. Quantum Mechanics I**	12		**1. Quantum Mechanics I**	08	
	i) Old quantum theory	06	GDP	iI) Basic quantum mechanics Compton effect	08	GDP	iii) Basic Postulates of QM (Cont.)	08	GDP
	ii) Basic quantum mechanics up to Double slit expt.	04	GDP	iIi)Basic Postulates of QM	04	GDP			
	2. Thermal Physics II	11		**2. Thermal Physics II**	13		**2. Thermal Physics II**	11	
	i) Basic concepts	03	SN	ii) 1st law of Thermodynamics part-II	03	SN	iv) Thermodynamic functions	05	SN
	ii) 1st law of Thermodynamics part-I	08	SN	iii) 2nd law of Thermodynamics	10	SN	v) Change of state	06	SN

PHYSICS (HONS.) 2018-19									
Paper	**First Term July 18 – Oct 18**	**No of Lectures**	**Faculty**	**Second Term Nov 18 – Jan 19**	**No of Lectures**	**Faculty**	**Third Term Feb 19 - June 19**	**No of Lectures**	**Faculty**
V	**Unit-I**			**Unit-I**					
	1. Classical Mechanics II	16		**1. Classical Mechanics II**	14				
	i) Central Force Problem	09	FK	iii) Lagrangian and Hamiltonian formulation of Classical Mechanics	14	FK			
	ii) Mechanics of Ideal Fluid	07	FK						
	2. Special Theory of Relativity	16		**2. Special Theory of Relativity**	14				
	i) Introduction	04	SN	iii) Vectors and Tensors	08	SN			
	ii) Special Theory of Relativity	12	SN	iv) Invariant Intervals	06	SN			
	Unit-II			**Unit-II**					
	1. Quantum Mechanics II	18		**1. Quantum Mechanics II**	12				
	i) Time dependent and time independent Schrodinger Eqn.	05	GDP	iii) Schrodinger Eq. in Spherical polar co-ordinate	12	GDP			
	ii) Simple Application of Quantum Mechanics	13	GDP						
	2. Atomic Physics	20		**2. Atomic Physics**	10				
	i) Atomic Spectra	12	SD	iv) Molecular Spectroscopy	04	SD			
	ii) Vector atom model	05	SD	v) Laser Physics	06	SD			
	iii) Many electron model	03	SD						

PHYSICS (HONS.) 2018-19									
Paper	**First Term July 18 – Oct 18**	**No of Lectures**	**Faculty**	**Second Term Nov 18 – Jan 19**	**No of Lectures**	**Faculty**	**Third Term Feb 19 - June 19**	**No of Lectures**	**Faculty**
VI	**Unit-I**			**Unit-I**					
	1. Nuclear and Particle Physics I	30		**2. Nuclear and Particle Physics II**	30				
	i) Bulk properties of Nuclei	06	GDP	i) Nuclear reactions	05	SD			
	ii) Nuclear structure	10	GDP	ii) Nuclear fission and fusion	06	SD			
	iii) Unstable Nuclei			iii) Elementary particles					
	a) Alpha decay	04	GDP	a) Four basic interactions	04	SN			
	b) Beta decay	05	GDP	b) Classifications	05	SN			
	c) Gama decay	05	GDP	iv) Particle accelerator and detector	04	SN			
				v) Nuclear Astrophysics	06	SN			
	Unit-II			**Unit-II**					
	1. Solid State Physics I	30		**2. Solid State Physics II**	30				
	i) Crystal Structure	12	BC	i) Dielectric Property of materials	05	BC			
	ii) Structure of Solids	18	BC	ii) Magnetic properties of materials	12	BC			
				iii) Lattice Vibrations	07	BC			
				iv) Super conductivity	06	BC			
VIIA	**Unit-I**			**Unit-I**					
	1. Statistical Mechanics	16		**1. Statistical Mechanics**	14				
	i) Microstates and Macrostates	07	SN	iv) Quantum Statistical Mechanics	14	SN			
	ii) Classical Stat. Mach.	03	SN						
	iii) Motivations for Quantum Statistics	06	SN						
	2. Electromagnetic Theory	16		**2. Electromagnetic Theory**	14				
	i) Generalization of Ampere's law	09	SDR	iii) EM Waves in conducting medium	06	SDR			
	ii) EM Wave in an isotropic dielectric	07	SDR	iv) Dispersion	04	SDR			
				v)Scattering	04	SDR			

PHYSICS (GEN.) 2018-19									
SEMESTER – I July 18 – November 18									
Paper	**Core Course - 1**	**No of Lectures**	**Faculty**	**Paper**	**Core Course - 1**	**No of Lectures**	**Faculty**	**Internal Assessment (by College)**	**Parent Teacher Meeting**
PHS-G-CC-1-1TH	**Mechanics (Theory)**	60		**PHS-A-CC-1-1P**	**Mechanics (Practical)**	60	BC + GDP + SD + FK	3rd week of November	1st week of December
	1. Mathematical Methods	15	FK		1.Moment of inertia of cylinder/bar				
	2. Laws of Motion	05	FK		2.Y- Modulus of a metal bar				
	3. Work and Energy	05	SDR		3.Rigidity modulus of wire				
	4. Gravitation	10	SDR		4. Moment of Inertia of a flywheel.				
	5. Oscillations	05	BC		5.g using bar pendulum				
	6. Rotational Motion	05	BC		6.The height of a building using sextant				
	7. Elasticity	05	SD		1.Moment of inertia of cylinder/bar				
	8. Surface Tension	05	SD						
	9. Viscosity	05	SD						

PHYSICS (GEN.) 2018-19									
SEMESTER – II July 18 – November 18									
Paper	**Core Course - 2**	**No of Lectures**	**Faculty**	**Paper**	**Core Course - 2**	**No of Lectures**	**Faculty**	**Internal Assessment (by College)**	**Parent Teacher Meeting**
PHS-G-CC-2-2TH	**Electricity and Magnetism (Theory)**	60		**PHS-A-CC-2-2P**	**Mechanics (Practical)**	60	BC + GDP + PS + SN	3rd week of May	1st week of June
	1. Electrostatics	15	GL		1. Determination of unknown resistance by Carey Foster method.				
	2. Magnetism	15	GL		2. Measurement of a current flowing through a register using potentiometer.				
	3. Electromagnetic Induction	05	BC		3. Determination of the horizontal components of earth's magnetic Field.				
	4. Linear Network	05	BC		4. Conversion of an ammeter to a voltmeter.				
	5. Maxwell's Equations and Electromagnetic Wave Propagation	10	BC		5. Conversion of a voltmeter to an Ammeter.				
					6. Verification of Thevenin& Norton theorem and superposition theorem.				

PHYSICS (GENERAL) 2018-19									
Paper	**First Term July 18 – Oct 18**	**No of Lectures**	**Faculty**	**First Term Nov 18 – Jan 19**	**No of Lectures**	**Faculty**	**Third Term Feb 19- April 19**	**No of Lectures**	**Faculty**
IIB	**Electricity and Magnetism**	14		**Electricity and Magnetism**	20		**Electricity and Magnetism**	16	
	1. Electrostatics	6	SDR	4. Thermoelectricity	5	SDR	10. Alternating current	6	SDR
	2. Capacitor	3	SDR	5. Mag. effect of current	6	SDR	6. Lorentz force	4	SDR
	3. Steady current	5	SDR	8. E-M induction	4	SDR	7. Magnetic materials	6	SDR
				9. Varying currents	5	SDR			
IIIA	**Unit I: Physical Optics**	15		**Unit I: Physical Optics**	15		**Unit I: Physical Optics**	15	
	1. Light as an E-M wave	4	GDP	3. Diffraction	4	GDP	4. Polarization	3	GDP
	2. Interference of light	4	GDP						
	Unit II: Electronics	5		**Unit II: Electronics**	5		**Unit II: Electronics**	5	
	1. Diodes & Transistors	5	GDP	2. Digital circuits	5	GDP	3. Logic gates	5	GDP
	Unit III: Modern Physics	6		**Unit III: Modern Physics**	9		**Unit III: Modern Physics**	5	
	1. Special theory of relativity	3	BC	3. Basic quant. mechanics	5	BC	5. Nuclear physics	5	BC
	2. Quantum theory of rad^{n}.	3	BC	4. Solid state physics	4	BC			
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IVA	**Unit I: Pumps, Gauges and Engine**	10		**Unit II: Energy sources**	15				
	1. Production & measurement of high vacuum	5	SDR	1. Conventional energy sources	5	SDR			
	2. Engines	5	SDR	2. Non- Conventional energy sources	5	SDR			
	Unit III: Electronics	15		**Unit IV: Communications**	10				
	1. Feedback	5	FK	1. Propagation of Electromagnetic waves	3	FK			
	2. Digital electronics	5	FK	2. Transmission of Electromagnetic waves	4	FK			
	3. Instruments	5	FK	3. Transm^{n}. through media	3	FK			