Programme: B. Sc. Physics

SEMESTER - I			
Core I	**Properties of Matter**		
Code: 18UPHC11	**Hrs/Week: 4**	**Hrs/Semester: 60**	**Credits: 4**

Course Outcome:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	calculate the acceleration due to gravity at a place.	1	An
CO-2	define stress, strain, Hooke's law and Poisson's ratio	1	Re
CO-3	describe the fundamental concepts of stress and strain and the relationship between both through the stress-strain equations in order to solve the problems for simple tridimensional elastic modes	1	Un
CO-4	calculate the elastic constant values of materials which is necessary for beam construction.	1, 6	An
CO-5	sketch the uses of I-form girders	1	Ap
CO-6	describe the properties of fluids such as viscosity, surface tension and capillary rise.	1	Un
CO-7	evaluate the properties and utility of lubricants	1, 6	Ev
CO-8	calculate the surface tension of a liquid	1, 6	Ap

SEMESTER – I			
Core II	**Mechanics, Wave Oscillations and Acoustics**		
Code: 18UPHC12	**Hrs/Week: 4**	**Hrs / Semester: 60**	**Credits: 4**

Course Outcome:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	discuss impulse and linear momentum, calculate the change in momentum of an object for the net force acting on the object	1	Un
CO-2	analyze the motion of the projectile that is projected with an initial velocity	1	An
CO-3	calculate the torque and angular momentum for a moving particle	1, 6	An, Ev
CO-4	locate the center of gravity, the line of gravity and the center of pressure of the objects	1, 6	Un, Ev
CO-5	understand the factors affecting atmospheric pressure , variation of atmospheric pressure with temperature, principle of barometer and working of different kinds of barometer	1	Un
CO-6	define simple harmonic motion and discuss the principle of simple harmonic motion and their types	1	Re, Un
CO-7	understand how sound is transmitted through building components	1	Un
CO-8	identity, discuss and resolve acoustical problems related to architectural acoustics and acoustic comfort	1, 6	Un, An

SEMESTER I			
Allied	**Allied Chemistry I**		
Code :18UCPA11	**Hrs/Week : 4**	**Hrs/ Sem : 60**	**Credits : 3**

Course Outcome :

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO 1	list the rules for filling of electron in orbitals, Recognize conductors, insulators and semiconductors, write the electronic configuration of elements	1, 4	Re, Ap
CO 2	identify methods to purify organic compounds Estimate the amount of Carbon, Hydrogen and sulphur in a sample	1,4,3,7	Un
CO 3	evaluate molecular weight of a chemical compound	1, 2	Cr
CO 4	correlate the importance of colloids in day to day life, develop a basic understanding of emulsions	1 , 2 , 3	An , Ev
CO 5	explain different types of molecular velocities and its significance	1 , 4	Un
CO 6	know basic terms associated with gaseous state and an insight into degrees of freedom and law of equipartition of energies	1.2, 3	Re
CO 7	identify fundamental particles of nuclear isotopes	1, 3, 4	Re
CO 8	learn the basic principles behind nuclear fusion and fission and enumerate its application	1, 2	An

SEMESTER - I			
Ability Enhancement Course - Value Education			
Code : 18UAVE11	**Hrs/Week : 2**	**Hrs / Semester: 30**	**Credits : 2**

Unit I : Introduction

Value education and its Relevance to present day – Meaning of Value Education – Education and its role – Leading a fulfilling life of universal values

Unit II : Cultivation of Personal Values

Personal Values– Truth - Honesty and Integrity – Love –Compassion – Gratitude - Courage – Optimism – Friendship

Unit III : Elimination of Negative Emotions

Overcome fear – Jealousy is harmful – Sources of jealousy - Jealousy and compulsiveness- Be an optimist – Gossip is Dynamite – Anger

Unit IV : Family Values

Familial Responsibilities –Five Basic Functions of a Mother - Fathers' role in the family - Five Duties of Children to Parents - Indian Cultural Values

Unit V : Spiritual Value

Cultivating Good Manners – Being Persuasive – Being authentic – Professional Ethics – Work Culture – Code of Conduct

SEMESTER - II			
Core III	**Thermal Physics and Statistical Mechanics**		
Code: 18UPHC21	**Hrs / Week: 4**	**Hrs / Semester: 60**	**Credits: 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	define temperature, pressure, closed system, reversible and irreversible process	1	Re
CO-2	understand the basic concepts of thermodynamics such as temperature, pressure, properties, closed system, reversible and irreversible process	1	Un
CO-3	understand the transfer of energy	1	Un
CO-4	demonstrate the experiment regarding the measurement of thermal conductivity and specific capacity	1, 2	An
CO-5	calculate the thermal conductivity of a bad conductor	1, 6	An
CO-6	understand the low temperature physics, concerned with the behavior of matter in the temperature regime where quantum effects are dominated	1	Un
CO-7	create an interest in field of research in low temperature physics	1	Cr
CO-8	employ Fermi-Dirac and Bose-Einstein statistics according to the spin of the particle and compare the three statistics	1	An, Ev

SEMESTER – II			
Core IV	**Optics**		
Code: 18UPHC22	**Hrs / Week: 4**	**Hrs / Semester: 60**	**Credits: 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	understand the theory behind the important properties of light such as reflection, refraction, dispersion, interference, diffraction and polarisation.	1	Un
CO-2	calculate the focal length of lenses in contact and out of contact with each other	1, 6	An
CO-3	determine the refractive index and dispersive power of the material of the prism	1, 2, 6	Ev
CO-4	define the different types of aberrations in lenses and discuss the methods to reduce them	1	Re, Un
CO-5	describe the phenomenon of interference in reflected systems and calculate the refractive index of liquids by forming Newton's rings	1, 2, 6	Un, Ev
CO-6	calculate the thickness of a thin wire by forming interference fringes	1, 2, 6	Ev
CO-7	evaluate the dispersive power and resolving power of a grating and demonstrate experiments with a grating and find the wavelengths of the light used	1, 2, 6	Ev, An
CO-8	acquire knowledge of the polarisation of light and its changes upon reflection and transmission	1	Un

SEMESTER II			
Allied	**Allied Chemistry II**		
Code : 18UCPA21	**Hrs/Week : 4**	**Hrs/ Sem : 60**	**Credits : 3**

Course Outcome :

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO 1	Differentiate ores and minerals Explain the methods of purification of ores Know the extracting methods , properties and uses of titanium, vanadium ,thorium. Titanium tetrachloride, Vanadiumpentoxide, Thorium nitrate.	1	An,Un, Re
CO 2	Synthesise some industrially important organic compounds such as Freon , rayon , polyester , nylon , thiokol Dacron	1, 5	Ev
CO 3	Classify fuels and know its industrial uses	1, 4	Ap
CO 4	Identify the techniques for sterilising water for domestic use	1, 4	An
CO 5	Know the basics of abrasives	1,4	Re
CO 6	Know the principles of volumetric analysis	1,3 , 4	Re
CO 7	Assess error analysis	1	Cr
CO 8	Know the basic concepts of photochemistry and electrochemistry	1,3	Re

SEMESTER III			
Core V	**Electricity and Electromagnetism**		
Code: 18UPHC31	**Hrs./Week : 4**	**Hrs./Sem : 60**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO–1	recall Coulomb's law	1	Re
CO–2	discuss potential due to point charge	1	Un
CO–3	apply the principle of potentiometer to measure current and resistance	1,4,6	Ap
CO–4	compare self inductance and mutual inductance	1,4,6	Ev
CO–5	describe eddy current	1	Un
CO–6	construct LCR series and parallel resonance circuit	1,4,6	Cr
CO–7	study the uses of transformer	1,4,6	Ap
CO–8	formulate Maxwell's equations for the propagation of electromagnetic waves	1	Cr

Semester –III			
Allied	**Allied Mathematics – I**		
Code : 18UMAA31	**Hrs/week :3**	**Hrs/Sem :45**	**Credits :2**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	form the equations from the given roots.	1	Cr
CO-2	Approximate solutions of equations by applying Horner's method and Newton's method	1	Un ,Ev
CO-3	transform equations by increasing, decreasing and multiplying the roots of the equation.	3	An
CO-4	develop and apply concepts of expressions and equations to investigate and describe relationships	7	An
CO-5	demonstrate problem solving skills	3, 8	Cr
CO-6	evaluate eigen values and eigen vectors of square matrices and make use of the properties of determinants in their calculation.	1	Un, Ev
CO-7	calculate the radius of curvature by differentiation	1,3	Un, Ev
CO-8	calculate centre and circle of curvature.	1,3	Ev

SEMESTER – III			
Allied	**Allied Mathematics – II**		
Code : 18UMAA32	**Hrs / Week: 3**	**Hrs / Semester: 45**	**Credits: 2**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	compute the curl and the divergence of vector fields	1,3	Cr
CO-2	compute the gradient of a scalar valued function	1,3	Cr
CO-3	solve Differential Equations	1	Ev
CO-4	interpret basic definitions and terminology associated with differential equations and their solutions	3	Un
CO-5	classify the differential equations with respect to their order and linearity	1	An
CO-6	solve linear differential equations	1	Ev
CO-7	find complementary functions	1	Re
CO-8	evaluate particular integrals of the form e^{ax}, $\sin ax, \cos ax, x^m$ and $e^{ax} f(x)$	1,3	An,Ev

SEMESTER III			
NME I	**Applied Physics I**		
Code : 18UPHN31	**Hrs/Week : 2**	**Hrs/Sem : 30**	**Credits : 2**

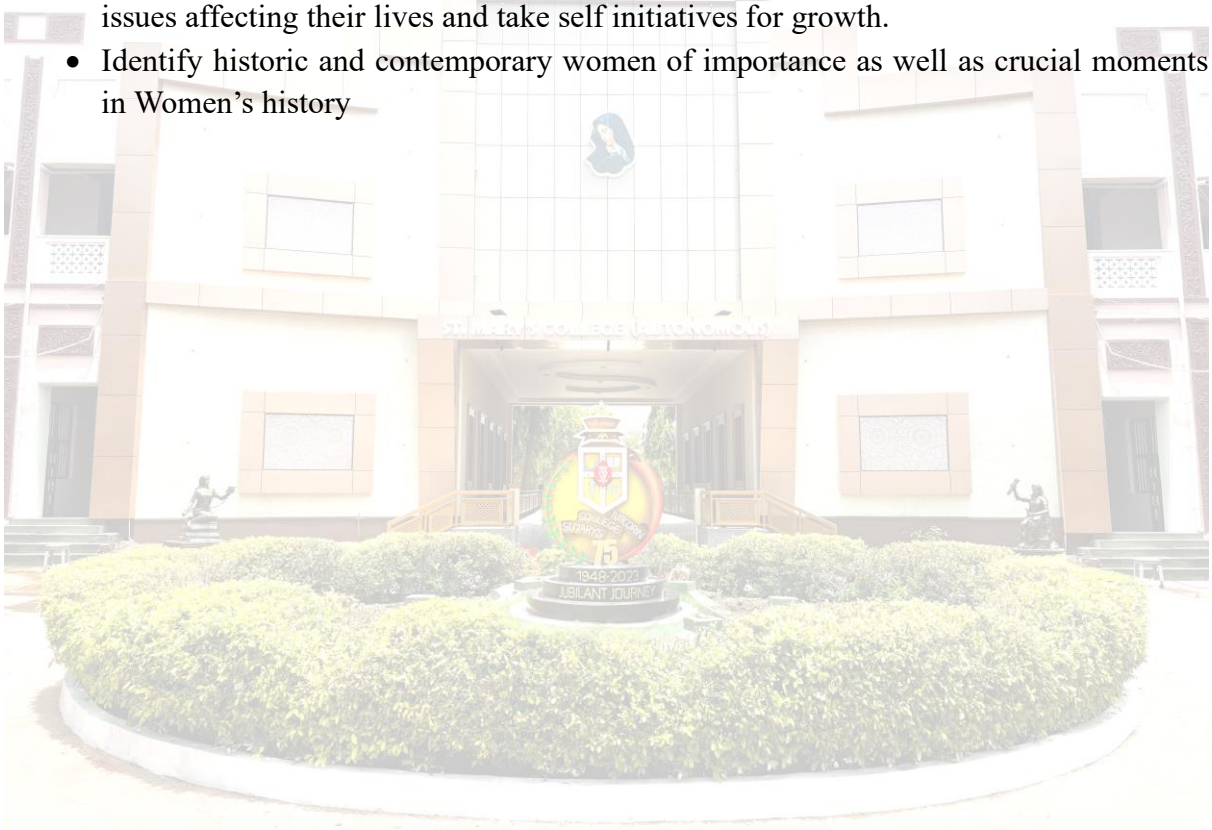
Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall the tools used in the home	3	Re
CO –2	discuss the systems of domestic wiring	3	Un
CO –3	explain the principle of Air Conditioning	3	Un
CO –4	sketch the refrigerating cycle	3	Ap
CO –5	describe the function of a compressor	3	Un
CO –6	understand the theory behind the important properties of light such as reflection, refraction , interference and total internal reflection	1,3	Un
CO –7	discuss the types of optical fibers	2,3	Ev
CO –8	list out the applications of lasers	3	Re

Semester – III			
Women's Synergy			
Code : 18UAWS31	**Hrs/ Week : 2**	**Hrs/Sem:30**	**Credits : 2**

Course Outcome

- To know about Women's health issues including menstruation, pregnancy, child birth etc, thereby taking care of themselves.
- Create awareness about their own biases, fears and comfort levels and encourage to dream and fuel their own growth and self development.
- Engage in promoting social justice and women rights
- Create platforms and facilitate the young women to operate symbiotically towards issues affecting their lives and take self initiatives for growth.
- Identify historic and contemporary women of importance as well as crucial moments in Women's history



SEMESTER IV			
Core VI	**Electronics and Communication**		
Code : 18UPHC41	**Hrs/Week : 4**	**Hrs/Sem : 60**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall semiconductors	2	Re
CO –2	design a voltage regulator using Zener diode.	2,4,6	Cr
CO –3	construct Colpitt's oscillator, Hartley oscillator.	2,4,6	Cr
CO –4	design a single stage transistor amplifier and an oscillator	2,4,6	Cr
CO –5	list out the types of networks	2	Re
CO –6	differentiate monostable and bistable multivibrator	2,4,6	An
CO –7	describe Satellite Communication	2	Un
CO –8	apply the principle of Doppler effect to Radar	2,3	Ap

SEMESTER - IV			
Allied	**Allied Mathematics – III**		
Code : 18UMAA41	**Hrs / Week: 3**	**Hrs / Semester: 45**	**Credits: 2**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	identify the difference between partial differential equation and ordinary differential equation	1	An
CO-2	form the partial differential equation	1	Cr
CO-3	classify various types of partial differential equations	3	Un
CO-4	apply Laplace transform on functions	1	An
CO-5	understand inverse Laplace transform	1	Un
CO-6	solve differential equation using Laplace transform	1	An
CO-7	identify Beta integrals and Gamma integrals	3	An
CO-8	understand the concept of Beta and Gamma functions.	1	Un

SEMESTER – IV			
Allied	**Allied - Mathematics – IV**		
Code : 18UMAA42	**Hrs / Week: 3**	**Hrs / Semester: 45**	**Credits: 2**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	use the Jacobian to change variables to ease integration	1,3	Un
CO-2	evaluate line integrals	3	Ev
CO-3	set up the regions and integrate double integrals in rectangular and polar coordinates	3	Re, Ev
CO-4	set up and evaluate triple integrals	3	R,E
CO-5	use Green's theorem to evaluate line integrals along simple closed contours on the plane.	1	Cr
CO-6	apply Stokes' theorem to compute line integrals along the boundary of a surface.	1	An
CO-7	use Stokes' theorem to give a physical interpretation of the curl of a vector field.	1,3	An
CO-8	use the divergence theorem to give a physical interpretation of the divergence of a vector field.	1,3	An

SEMESTER IV			
Core Skill Based	**Physics for Competitive Examinations**		
Code : 18UPHS41	**Hrs./Week : 4**	**Hrs./Sem : 60**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall units and dimensions	8	Re
CO –2	solve problems in gravitation and escape velocity	1,8	An
CO –3	solve problems in magnetic effect of current	1,8	An
CO –4	solve problems in Surface Tension and Viscosity	1,8	An
CO –5	solve problems related to Kirchhoff's laws & Steady current	1,8	An
CO –6	solve problems in Electrostatics & Electric potential	1,8	An
CO –7	solve problems in Electromagnetic Induction	1,8	An
CO –8	solve problems in Zener diode & Transistor	2,8	An

SEMESTER V			
Common Core Core VII – Solid state and Material Science			
Code : 18UPCC51	**Hrs/Week : 6**	**Hrs/Sem :90**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO–1	understand the basic symmetry elements and operations of crystals	1, 2	Un
CO– 2	distinguish the types of crystals and enumerate the various crystal imperfections	3,4	An
CO–3	get a clear knowledge about metallic glasses, ceramics and biomaterials.	1, 3, 5,7, 8	Re
CO –4	justify the wave nature of matter and its experimental study	1,3	Ev
CO –5	apply Bragg's law for x –ray study	2	Ap
CO –6	distinguish magnetic materials based on susceptibility	1,2	An
CO –7	use magnetic materials in various field	1,2	Ap
CO –8	discuss the synthesis methods of nano materials	2,3	Un

SEMESTER V			
Core VIII	**Digital Electronics**		
Code : 18UPHC52	**Hrs/Week : 5**	**Hrs/Sem : 75**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	define binary numbers	2	Re
CO –2	explain number system	2	Un
CO –3	construct logic gates	2, 4,6	Cr
CO –4	recall the fundamental concepts and techniques used in digital electronics	2	Re
CO –5	analyze the construction of shift register	2,5	An
CO –6	design registers, interpret logic functions, circuits and truth tables.	2, 4	Cr
CO –7	design counters, understand the concepts of decimal number system.	2,5	Cr
CO –8	differentiate A/D and D/A conversions	2, 4	An

SEMESTER V			
Core IX	**Computational Physics**		
Code : 18UPHC53	**Hrs/Week : 5**	**Hrs/Sem : 75**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	utilize their knowledge of C++ programming language and write programs for solving various problems in physics	6,8	Ap
CO –2	design a program for operator overloading	6	Cr
CO –3	distinguish between one dimensional and two dimensional arrays	6	An
CO –4	define various types of constructors	6	Re
CO –5	design a simple C++ program for function	6	Cr
CO –6	define a class	6	Re
CO –7	differentiate constructors and destructors	6	An
CO –8	solve the problem in Bisection method	6, 8	An

SEMESTER V			
Core Integral I	**Renewable Energy Sources**		
Code :18UPHI51	**Hrs/Week : 4**	**Hrs/Sem : 60**	**Credits : 4**

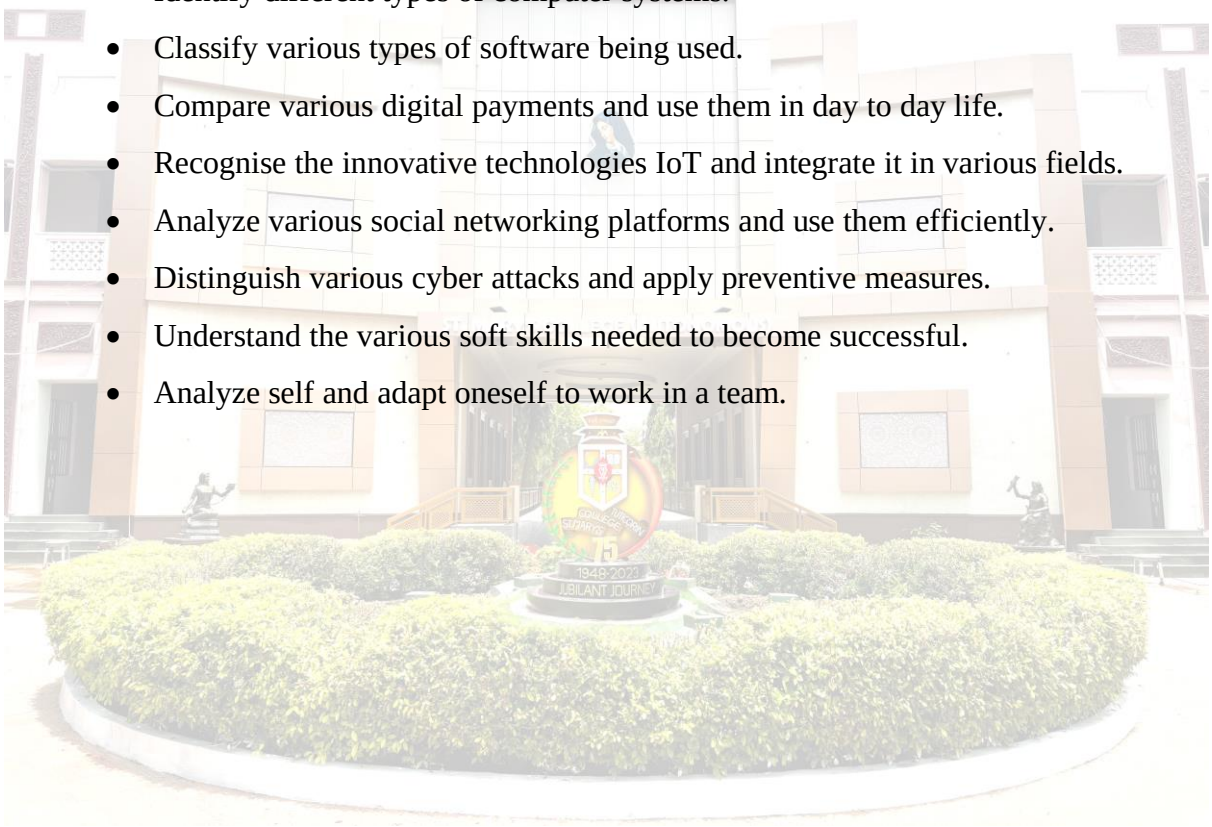
Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	construct solar ponds for water desalination, solar cookers and solar green houses	7, 5	Cr
CO –2	assess the working of windmills used for power generation	7	Ev
CO –3	list the renewable energy sources available in surplus	7	Re
CO –4	explain different types of solar water heaters	7,5	Un
CO –5	sketch out the classifications of WEC system	7	Ap
CO –6	recall Green house effect	7	Re
CO –7	discuss Energy audit	7	Un
CO –8	design KVIC plants for bio gas generation	7	Cr

Semester - V			
Common Skill Based Core	**Computer for Digital Era and Soft Skills**		
Code : 18UCSB51	**Hrs / Week : 2**	**Hrs / Sem : 30**	**Credits : 2**

Course Outcome

- Identify different types of computer systems.
- Classify various types of software being used.
- Compare various digital payments and use them in day to day life.
- Recognise the innovative technologies IoT and integrate it in various fields.
- Analyze various social networking platforms and use them efficiently.
- Distinguish various cyber attacks and apply preventive measures.
- Understand the various soft skills needed to become successful.
- Analyze self and adapt oneself to work in a team.



SEMESTER VI			
Core XI	**Nuclear and Particle Physics**		
Code :18UPHC62	**Hrs/Week : 4**	**Hrs/Sem : 60**	**Credits : 4**

Vision: To enrich our students with the knowledge of nuclear and particle physics

Mission: To study the properties of α, β, γ rays, process of radioactivity and its applications and various detectors

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall the structure of nuclei	2	Re
CO –2	understand simple nuclear models	2	Un
CO –3	explain properties of α, β, γrays and their decay	2	Un
CO –4	analyze the key features of nuclear fission and its applications	2	An
CO –5	analyze the key features of nuclear fusion and its applications	2	An
CO –6	understand the principle and working of particle accelerators	2	Un
CO –7	understand the principle and working of particle detectors	2	Un
CO –8	describe the constituent particles in the electron, proton and neutron	2	Un

SEMESTER VI			
Core XII	**Opto Electronics & Fibre Optic Communication**		
Code :18UPHC63	**Hrs/Week : 4**	**Hrs/Sem : 60**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall the basic principles of semiconductors	2	Re
CO –2	understand the formation of energy bands of semiconductors	2	Un
CO –3	list out the optical characteristics of semiconductors	2	Re
CO –4	explain the principle and working of optical sources	2	Un
CO –5	categorise the optical detectors and their principles	2	An
CO –6	analyze and classify the structure of optical fibres, its types and various optical losses	2	An
CO –7	understand the basics of signal propagation through optical fibres	2	Un
CO –8	understand the types and various optical losses	2	Un

SEMESTER VI			
Core Integral II	**Advanced Physics**		
Code :18UPHI61	**Hrs/Week : 4**	**Hrs/Sem : 60**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall laser and its applications in medicine industry	3	Re
CO –2	list out the applications of Holography	3	Re
CO –3	solve arithmetic operations using 8085	5,6	An
CO –4	draw 8085 MPU	5,6	An
CO –5	formulate a program to write two hexadecimal numbers using 8085	5,6	Cr
CO –6	discuss BCS theory	2	Un
CO –7	assess the usage of Superconductors	3	Ev
CO –8	list the materials and its properties for nuclear and space applications	2	Re

SEMESTER- I			
Core I	**Mechanics and Properties of Matter**		
Course Code : 21UPHC11	**Hours/Week: 6**	**Hrs/ Semester: 90**	**Credits : 5**

Course Outcomes:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	discuss the principle of conservation of energy and linear momentum (K2)	1	Un
CO-2	calculate the change in momentum of an object for the net force acting on the object (K3)	1	Ap
CO-3	analyse the motion of the projectile (K4)	1	An
CO-4	outline the fundamental concepts of stress and strain (K4)	1	An
CO-5	prove the relation connecting the three modulo of elasticity (K5)	1	Ev
CO-6	recall viscosity, coefficient of viscosity and surface tension (K1)	1	Re

SEMESTER- I			
SEC I	**Professional English for Physics – I**		
Course Code: 21UPHPE1	**Hrs./Week : 2**	**Hrs./Sem : 30**	**Credits : 2**

COURSE OUTCOMES:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	draw flowcharts and mind maps (K1)	5	Re
CO-2	apply their own ability to improve their own competence in using the language (K3)	5	Ap
CO-3	criticise the use of language to speak with confidence (K5)	5	Ev
CO-4	discuss the importance of reading for life (K2)	5	Un
CO-5	write independently unfamiliar texts with comprehension (K1)	5	Re
CO-6	outline the importance of writing in academic life (K4)	5	An

SEMESTER- II			
CORE II	**Thermal Physics and Optics**		
Course Code: 21UPHC11	**Hours/Week: 6**	**Hrs/ Semester: 90**	**Credits : 5**

COURSE OUTCOMES:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	recall the laws of thermodynamics to understand the concepts of transport phenomenon (K1)	1	Un
CO-2	discuss the transfer of energy through conduction, convection and radiation (K2)	1	Re
CO-3	demonstrate and determine the thermal conductivity of a bad conductor (K3)	1	Ap
CO-4	categorize the different types of aberrations in lenses (K4)	1	An
CO-5	evaluate the thickness of a thin wire by forming interference fringes (K5)	1	Ev
CO-6	summarise the knowledge on polarisation of light and its changes upon reflection and transmission (K2)	1	Un

SEMESTER- II			
SEC II	**Professional English for Physics – II**		
Course Code: 21UPHPE2	**Hrs./Week : 2**	**Hrs./Sem : 30**	**Credits : 2**

COURSE OUTCOMES:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	discuss in small groups based on the listening and reading passages (K2)	5	Un
CO-2	identify the articles, prepositions and pronouns in the given passages (K1)	5	Re
CO-3	apply the acquired vocabulary knowledge in their writing skills (K3)	5	Ap
CO-4	simplify the given comprehension (K4)	5	An
CO-5	argue on digital competence for academic and professional life (K5)	5	Ev
CO-6	write slogans and captions (K1)	5	Re

SEMESTER III			
Core III	**Electricity and Electromagnetism**		
Course Code: 21UPHC31	**Hrs./Week : 4**	**Hrs./Sem : 60**	**Credits : 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO–1	recall Current, Ohm's law and Kirchoff's law (K1)	1	Re
CO–2	apply Kirchoff's law to Wheatstone's network (K3)	1,6	Ap
CO–3	apply the principle of potentiometer to measure current and resistance (K3)	1,6	Ap
CO–4	compare self inductance and mutual inductance (K4)	1,6	An
CO–5	compare LCR series and parallel resonance circuit (K2)	1,6	Un
CO–6	evaluate the value of capacitance using Desauty's bridge (K5)	1,6	Ev

SEMESTER – III			
Part III	**Allied Mathematics – I**		
Code : 21UMAA31	**Hrs / Week: 6**	**Hrs / Semester: 90**	**Credits: 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	POs addressed	CL
CO-1	the equations from the given roots & approximate solutions of equations by applying Horner's method and Newton's method	1	Un
CO-2	develop and apply concepts of expressions and equations to investigate and describe relationships	5	An
CO-3	evaluate eigen values and eigen vectors of square matrices and make use of the properties of determinants in their calculation.	3	Ev
CO-4	calculate the radius of curvature, centre and circle of curvature.	5	Ev
CO-5	compute the gradient of a scalar valued function ,curl,and divergence of vector fields	3	Cr
CO-6	interpret basic definitions and classify the differential equations with respect to their order and linearity	1	Un

SEMESTER III			
NME I	**Applied Physics I**		
Course Code: 21UPHN31	**Hrs./Week : 2**	**Hrs./Sem : 30**	**Credits : 2**

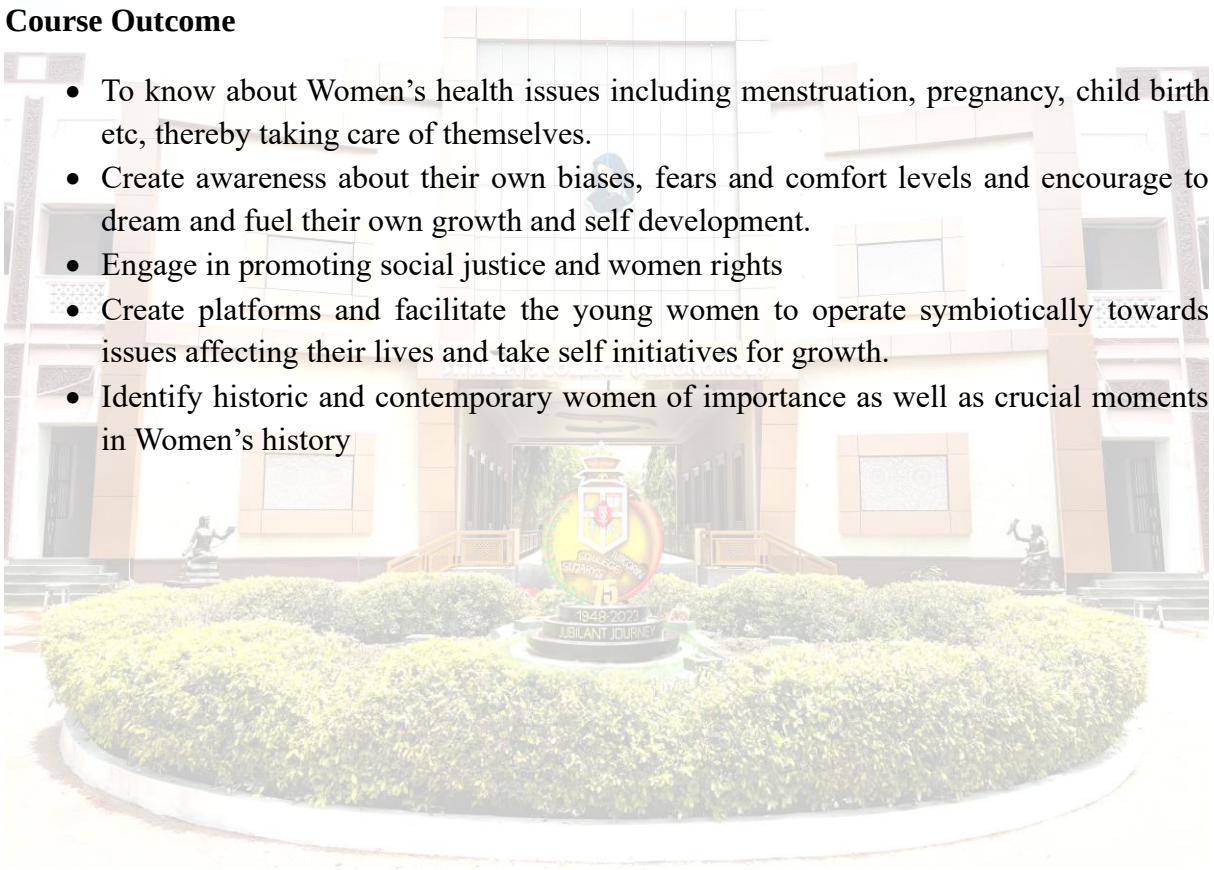
Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	identify tools used in the home (K1)	4	Re
CO –2	discuss the systems of domestic wiring (K2)	4	Un
CO –3	sketch the refrigerating cycle (K4)	4	An
CO –4	explain the function of a compressor (K2)	4	Un
CO –5	classify the types of emission of laser (K3)	4	Ap
CO –6	apply the application of laser in various fields (K3)	4	Ap

Semester – III			
Women's Synergy			
Code : 18UAWS31	**Hrs/ Week : 2**	**Hrs/Sem:30**	**Credits : 2**

Course Outcome

- To know about Women's health issues including menstruation, pregnancy, child birth etc, thereby taking care of themselves.
- Create awareness about their own biases, fears and comfort levels and encourage to dream and fuel their own growth and self development.
- Engage in promoting social justice and women rights
- Create platforms and facilitate the young women to operate symbiotically towards issues affecting their lives and take self initiatives for growth.
- Identify historic and contemporary women of importance as well as crucial moments in Women's history



SEMESTER IV			
Core IV	**Electronics and Communication**		
Course Code: 21UPHC41	**Hrs/Week:4**	**Hrs/Sem:60**	**Credits:4**

Course Outcome:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall semiconductors (K1)	2	Re
CO –2	explain a universal divider bias (K2)	2	Un
CO –3	construct inverting and non inverting amplifier (K3)	2, 6	Ap
CO –4	summarize the types of networks (K2)	2	Un
CO –5	prove Thevenin's and Norton's theorem (K5)	2, 6	Ev
CO –6	outline the principle of amplitude modulation reception (K4)	2	An

SEMESTER-IV			
Part III	**Allied Mathematics-II**		
Code : 21UMAA41	**Hrs/Week: 6**	**Hrs/Sem: 90**	**Credits: 4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	POs addressed	CL
CO-1	identify the difference between partial differential equation and ordinary differential equation	1	An
CO-2	classify various types of partial differential equations and form the partial differential equation	3	Un
CO-3	solve differential equations using Laplace transform	5	An
CO-4	set up the regions and integrate double integrals in rectangular and polar coordinates.	2	Ev
CO-5	use Green's theorem to evaluate line integrals along simple closed contours of the plane	3	Cr
CO-6	identify and understand the concept of Beta integrals and Gamma integrals	2	Ap

SEMESTER IV			
Skill Based Elective	**Physics for Competitive Examinations**		
Course Code : 21UPHS41	**Hrs./Week :2**	**Hrs./Sem : 30**	**Credits :2**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	evaluate the problems in gravitation and escape velocity (K5)	4	Ev
CO –2	recall surface tension and viscosity (K1)	4	Re
CO –3	discuss the laws of thermodynamics (K2)	4	Un
CO –4	distinguish the interference from diffraction (K4)	4	An
CO –5	apply Kirchhoff's laws to solve problems (K3)	4	Ap
CO –6	explain problems in electromagnetic induction (K2)	4	Un

SEMESTER V			
Core V (Common Core)	**Material Science**		
Course Code : 21UPCC51	**Hrs./Week :6**	**Hrs./Sem :90**	**Credits :5**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO – 1	identify the basic symmetry elements and operations of crystals, distinguish the types of crystals and enumerate the various crystal imperfections (K1)	2	Re
CO – 2	rank the properties of new materials like metallic glasses, shape memory alloys, high temperature materials, smart materials and biomaterials and apply them in various walks of life (K5)	2	Ev
CO – 3	justify the wave nature of the matter and its experimental study(K5)	2	Ev
CO – 4	distinguish magnetic materials based on susceptibility(K4)	2,1	An
CO – 5	summarise the uses of magnetic materials in various field (K2)	2,1	Un
CO – 6	outline the synthesis methods of nano materials(K4)	2,4	An

SEMESTER V			
Core VI	**Digital Electronics**		
Course code: 21UPHC51	**Hrs./Week : 5**	**Hrs./Sem : 75**	**Credits :5**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall binary numbers (K1)	2,6	Re
CO –2	summariase the functions of encoder and decoder (K2)	2,6	Un
CO –3	construct logic gates (K3)	2, 6	Ap
CO –4	analyse the construction of counters and shift register (K4)	2,6	An
CO –5	distinguish A/D from D/A conversions (K4)	2, 6	An
CO-6	prove De Morgan's laws (K5)	2,6	Ev

SEMESTER -V			
Core VII	**Computational Physics**		
Course Code : 21UPHC52	**Hrs./Week : 5**	**Hrs./Sem : 75**	**Credits : 5**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	describe programs for solving various problems in physics (K1)	4	Re
CO –2	distinguish between one dimensional and two dimensional arrays (K4)	4	An
CO –3	summaries the various types of constructors (K2)	4	Un
CO –4	design a simple c++ program for function (K1)	4	Re
CO –5	test the program to write two hexadecimal numbers using 8085 (K5)	4	Ev
CO –6	solve arithmetic operations using 8085 (K3)	4	Ap

SEMESTER V			
Core Elective	**Renewable Energy Sources**		
Course Code: 21UPHI51	**Hrs/Week:4**	**Hrs/Sem:60**	**Credits:4**

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	construct solar cooker (K3)	3	Ap
CO –2	analyse the working of windmills used for power Generation (K4)	3	An
CO –3	list the renewable energy sources available in surplus (K1)	3	Re
CO –4	explain different types of solar water heaters (K2)	3	Un
CO –5	sketch out the classifications of wave system (K3)	3	Ap
CO –6	recall green house effect (K1)	3	Re

SEMESTER – V			
Core Elective	**Mathematical Physics**		
Course Code: 21UPHE52	**Hrs / Week: 4**	**Hrs / Semester: 60**	**Credits: 4**

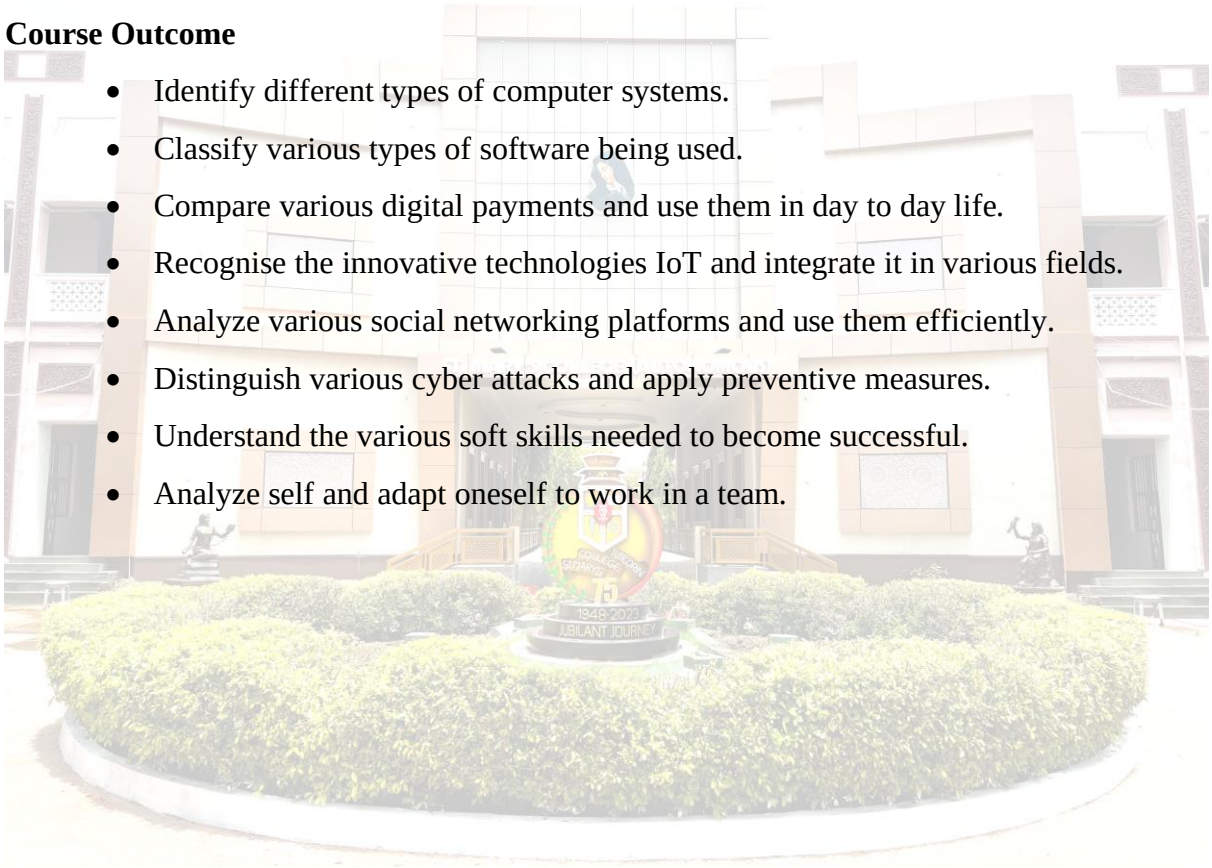
Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO–1	recall scalar and vector function (K1)	6	Re
CO–2	discuss curl and divergence of a vector function (K2)	6	Un
CO–3	apply the fundamental properties of determinants (K3)	6	Ap
CO–4	evaluate problems in Fourier series (K5)	6	Ev
CO–5	analyse problems in Fourier transform (K4)	6	An
CO–6	discuss the properties of Laplace transform (K2)	6	Un

Semester - V			
Common Skill Based Core	**Computer for Digital Era and Soft Skills**		
Code : 21UCSB51	**Hrs / Week : 2**	**Hrs / Sem : 30**	**Credits : 2**

Course Outcome

- Identify different types of computer systems.
- Classify various types of software being used.
- Compare various digital payments and use them in day to day life.
- Recognise the innovative technologies IoT and integrate it in various fields.
- Analyze various social networking platforms and use them efficiently.
- Distinguish various cyber attacks and apply preventive measures.
- Understand the various soft skills needed to become successful.
- Analyze self and adapt oneself to work in a team.



SEMESTER VI			
Core VIII	**Relativity and Quantum Mechanics**		
Course Code :21UPHC61	**Hrs./Week : 5**	**Hrs./Sem : 75**	**Credits : 4**

Course Outcome

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	describe Michelson –Morley experiment (K1)	2	Re
CO –2	summarise the postulates of special theory of relativity (K2)	2	Un
CO –3	outline the De Brogli's hyposthesis for the dualistic nature of matter waves (K4)	2	An
CO –4	relate the uncertainty condition between displacement and momentum; energy and time (K3)	2	Ap
CO –5	prove Bohr's quantization condition for angular momentum (K5)	2	Ev
CO –6	apply to Schrodinger equation to 1D and 3D physical (K3)	2	Ap

SEMESTER VI			
Core IX	**Atomic and Nuclear Physics**		
Course Code : 21UPHC62	**Hrs./Week : 4**	**Hrs./Sem : 60**	**Credits :3**

Course Outcome

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall the structure of atoms (K1)	2	Re
CO –2	understand the structure of nucleus and nuclear models (K2)	2	Un
CO –3	distinguish the properties of α, β, γ rays and their decay (K4)	2	An
CO –4	analyze the key features of nuclear fusion and fission (K3)	2	Ap
CO –5	evaluate half life, mean life, amount of substance left after disintegration (K5)	2	Ev
CO –6	discuss the principle and working of particle accelerators and detectors (K2)	2	Un

SEMESTER VI			
Core X	**Opto Electronics & Fibre Optic Communication**		
Course Code : 21UPHC63	**Hrs/Week:4**	**Hrs/Sem:60**	**Credits:4**

Course Outcome

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall the basic principles of semiconductors (K1)	2	Re
CO –2	explain the formation of energy bands of semiconductors (K2)	2	Un
CO –3	outline the optical characteristics of semiconductors (K4)	2	An
CO –4	classify optical detectors (K3)	2	Ap
CO –5	analyze and classify the structure of optical fibres, its types and various optical losses (K4)	2	An
CO -6	outline the different types of optical losses (K4)	2	An

SEMESTER VI			
Core XI	**Advanced Physics**		
Course Code :21UPHC64	**Hrs./Week : 4**	**Hrs./Sem : 60**	**Credits : 4**

Course Outcome

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO –1	recall the fundamentals of laser (K1)	4	Re
CO –2	summarise the applications of laser drilling (K2)	4	Un
CO –3	classify the polymers(K3)	4	Ap
CO –4	outline the structure of polymers (K4)	4	An
CO –5	criticize BCS theory (K5)	4	Ev
CO –6	discuss the materials and their properties for nuclear and space applications (K2)	4	Un

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Thoothukudi-628 001.