जम्मू केंद्रीय विश्वविद्यालय
Central University of Jammu
राया – सूचानी; बागला, जिला सांबा – 181143 जम्मू; जम्मू एवं कश्मीर
Rahya – Suchani (Bagla), District**Samba – 181143, Jammu (J&K)**

No. CUJ/Acad/2020/Phy/260

19 November, 2020

NOTIFICATION No. 79 /2020

Sub: Course Scheme and Syllabus of 1st and 2nd **Semesters** of **Integrated B.Sc. (Hons.) – M.Sc. Course** in **Physics** w.e.f. Academic Session **2020 – 21** – Reg.

Ref: Notification No. 68 of 2018 dated 02.11.2018

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It is hereby notified for the information of all concerned that on the recommendation of the Board of Studies of Department of Physics and Astronomical Sciences, the Academic Council in its meeting held on 27.07.2020 has approved the following **Course Scheme** and **Syllabus** of 1st and 2nd **semesters** of **Integrated B.Sc. (Hons.) – M.Sc. Course** in **Physics** w.e.f. Academic Session **2020 – 21**.

Semester 1st

Course Code	Course Title	Credit	CIA	MSE	ESE	Max Marks
Core Courses						
ICPHY1C002T	Mathematical Physics – I	4	25	25	50	100
ICPHY1C003L	Mathematical Physics – I Lab	2	12.5	12.5	25	50
ICPHY1C003T	Mechanics	4	25	25	50	100
ICPHY1C004L	Mechanics Lab	2	12.5	12.5	25	50
Elective Course						
ICCHM1E001T	Chemistry – I	4	25	25	50	100
ICCHM1E001L	Chemistry Lab – I	2	12.5	12.5	25	50
Foundation Course						
ICECL1F002T	English	2	12.5	12.5	25	50
Total		**20**	-	-	-	**500**

Semester 2nd

Course Code	Course Title	Credit	CIA	MSE	ESE	Max Marks
Core Courses						
ICPHY2C002T	Electricity and Magnetism	4	25	25	50	100
ICPHY2C002L	Electricity and Magnetism Lab	2	12.5	12.5	25	50
ICPHY2C003T	Waves and Optics	4	25	25	50	100
ICPHY2C003L	Waves and Optics Lab	2	12.5	12.5	25	50
Elective Course						
ICICT2E001T	Introduction to Computers	4	25	25	50	100
ICICT2E001L	Computer Lab	2	12.5	12.5	25	50
Foundation Course						
ICEVS2F001T	Environmental Science	2	12.5	12.5	25	50
Total		**20**	-	-	-	**500**

Interdisciplinary Course offered to other Departments						
Course Code	**Course Title**	**Credit**	**CIA**	**MSE**	**ESE**	**Max Marks**
ICPHY1I001T	General Physics	4	25	25	50	100
ICPHY1I001L	General Physics Lab	2	12.5	12.5	25	50

(Dr. Ravi Kumar)
Registrar
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01923-249658

Read on 18/11

R4039 19/11

Encl: Syllabus of 1st to 2nd Semester

To: Head, Department of Physics and Astronomical Sciences

Copy to: Controller of Examinations

C-2181 18/11/20

C-1550 19-11-20

1st Semester

ICPHY1C002T

B.Sc(H)-M.Sc. Physics			
Semester :	I	**Type:**	Core
Course Name:	Mathematical Physics-I	**Course Code:**	ICPHY1COR01T
Credits:	4	**L T P:**	3-1-0

(The emphasis of course is on applications in solving problems of interest to physicists. The students are to be examined entirely on the basis of problems, seen and unseen.)

UNIT-I

Recapitulation: Limits, continuity, average and instantaneous quantities, differentiation. Plotting functions. Intuitive ideas of continuous, differentiable, etc. functions and plotting of curves. Approximation: Taylor and binomial series. FirstOrder Differential Equations and Integrating Factor.

UNIT-II

Second Order Differential equations:Homogeneous Equations with constant coefficients Wronskian and general solution. Statement of existence and Uniqueness Theorem for Initial Value Problems. Particular Integral.Calculus of functions of more than one variable: Partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration. Constrained Maximizationusing Lagrange Multipliers.

UNIT-III

Orthogonal Curvilinear Coordinates. Derivation of Gradient, Divergence, Curl andLaplacian in Cartesian, Spherical and Cylindrical Coordinate Systems.Definition of Dirac delta function. Representation as limit of a Gaussian function and rectangular function. Properties of Dirac delta function.

UNIT-IV

Recapitulation of vectors: Properties of vectors. Scalar product and its invariance under rotations. Vector product, Scalar triple product and their interpretationin terms of area and volume respectively. Scalar and Vector fields.Vector Differentiation: Directional derivatives and normal derivative. Gradient of a scalar field and its geometrical interpretation. Divergence and curl of a vector field. Del and Laplacian operators. Vector identities, Gradient, divergence, curl and Laplacian inspherical and cylindrical coordinates.

UNIT-V

Vector Integration: Ordinary Integrals of Vectors. Multiple integrals, Jacobian. Notion of infinitesimal line, surface and volume elements. Line, surface and volume integrals of Vector fields. Flux of a vector field. Gauss' divergence theorem, Green's and Stokes
Theorems and their applications (no rigorous proofs).

Text and Reference Books:

1. Mathematical Methods for Physicists, G.B. Arfken, H.J. Weber, F.E. Harris,2013, 7th Edn., Elsevier.
2. Differential Equations, George F. Simmons, 2007, McGraw Hill.
3. Mathematical Tools for Physics, James Nearing, 2010, Dover Publications.
4. Mathematical methods for Scientists and Engineers, D.A. McQuarrie, 2003, Viva Book.
5. Advanced Engineering Mathematics, D.G. Zill and W.S. Wright, 5 Ed., 2012, Jones and Bartlett Learning.
6. Advanced Engineering Mathematics, Erwin Kreyszig, 2008, Wiley India.

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ICPHY1C003L

B.Sc(H)-M.Sc. Physics			
Semester :	I	**Type:**	Core
Course Name:	Mathematical Physics-I Lab	**Course Code:**	ICPHY1COR02L
Credits:	2	**L T P:**	0-0-4

The aim of this Lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- *Highlights the use of computational methods to solve physical problems*
- *The course will consist of lectures (both theory and practical) in the Lab*
- *Evaluation done not on the programming but on the basis of formulating the problem*
- *Aim at teaching students to construct the computational problem to be solved*
- *Students can use any one operating system Linux or Microsoft Windows*

List of Experiments:

Topics	Description with Applications
Introduction and Overview	Computer architecture and organization, memory and Input/output devices
Basics of scientific computing	Binary and decimal arithmetic, Floating point numbers, algorithms, Sequence, Selection and Repetition, single and double precision arithmetic, underflow &overflow-emphasize the importance of making equations in terms of dimensionless variables, Iterative methods
Errors and error Analysis	Truncation and round off errors, Absolute and relative errors, Floating point computations.
SCI lab	Solution of linear and quadratic equation, Matrix operation, Random number generation etc.
	Evaluation of trigonometric functions e.g. sin θ, cos θ, tan θ, etc.
	Given Position with equidistant time data to calculate velocity and acceleration and vice versa. Find the area of B-H Hysteresis loop
	To Solve the different types of Differential equations.

Text and Reference Books:

1. Introduction to Numerical Analysis, S.S. Sastry, 5th Edn. , 2012, PHI Learning Pvt. Ltd.
2. Schaum's Outline of Programming with C++. J. Hubbard, 2 0 00 , McGraw---Hill Pub.
3. Numerical Recipes in C: The Art of Scientific Computing, W.H. Pressetal, 3rd Edn. , 2007, Cambridge University Press.
4. A first course in Numerical Methods, U.M. Ascher& C. Greif, 2012, PHI Learning.
5. Elementary Numerical Analysis, K.E. Atkinson, 3rd Edn., 2007, Wiley India Edition.

ICPHY1C003T

B.Sc(H)-M.Sc. Physics			
Semester :	I	**Type:**	Core
Course Name:	Mechanics	**Course Code:**	ICPHY1COR03T
Credits:	4	**L T P:**	3-1-0

Unit-I

Coordinate systems: Cartesian, polar, spherical, and cylindrical. Newton's law of motion, conservation of momentum; impulse; momentum of variable mass system-motion of rocket; work and energy theorem, conservative and non-conservative forces, potential energy, energy diagram; stable and unstable equilibrium; elastic and inelastic collisions between particles. Centre of mass and laboratory frames.

Unit-II

Dynamics of a system of particles, centre of mass, moment of inertia: calculation of moment of inertia for rectangular, cylindrical and spherical bodies; Angular momentum of a particle and system of particles, conservation of angular momentum; torque, rotation about a fixed axis, kinetic energy of rotation; motion involving both translation and rotation.

Unit-III

Kepler's laws, two body problem and its reduction to one body problem and its solution; the energy equation and energy diagram; Law of gravitation: Gravitational force and potential energy, inertial and gravitational mass, potential and field due to spherical shell and solid sphere; motion of a particle under central force field, orbits of artificial satellites.

Unit IV

Frame of Reference: Inertial and Non-Inertial, Fictitious forces. Equation of motion with respect to a uniformly accelerating frame.Equation of motion with respect to a uniformly rotating frame - Centrifugal and Coriolis forces.Laws of Physics in a laboratory on the surface of the earth.

Unit-V

Elasticity: Relation between Elastic constants. Twisting torque on a Cylinder or Wire. Bending of a beam. Elastic potential energy. Fluid Motion: compressible and incompressible fluids, Equation of continuity; streamline and turbulent flow, Reynold's number. Euler's Equation, Pascal's law and Archimedes principle.Poiseuille's equation. Viscosity.

Text and Reference Books:

1. An introduction to mechanics, D. Kleppner, R.J. Kolenkow, 1973, McGraw-Hill.
2. Mechanics, Berkeley Physics, vol.1, C.Kittel, W.Knight, et.al. 2007, Tata McGraw-Hill.
3. Physics, Resnick, Halliday and Walker 8/e. 2008, Wiley.
4. Analytical Mechanics, G.R. Fowles and G.L. Cassiday. 2005, Cengage Learning.
5. Feynman Lectures, Vol. I, R.P.Feynman, R.B.Leighton, M.Sands, 2008, Pearson Education
6. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
7. Mechanics, D.S. Mathur, S. Chand and Company Limited, 2000 University Physics.

ICPHY1C004L

B.Sc(H)-M.Sc. Physics			
Semester :	I	**Type:**	Core
Course Name:	Mechanics Lab	**Course Code:**	ICPHY1COR04L
Credits:	2	**L T P:**	0-0-4

List of Experiments:

1. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
2. To study the random error in observations.
3. To determine the height of a building using a Sextant.
4. To study the Motion of Spring and calculate (a) Spring constant, (b) **g** and (c) Modulus of rigidity.
5. To determine the Moment of Inertia of a Flywheel.
6. To determine **g** and velocity for a freely falling body using Digital Timing Technique
7. To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).
8. To determine the Young's Modulus of a Wire by Optical Lever Method.
9. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
10. To determine the elastic Constants of a wire by Searle's method.
11. To determine the value of g using Bar Pendulum.
12. To determine the value of g using Kater's Pendulum.

Text and Reference Books:

1. Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Edn, 2011, Kitab Mahal.

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2nd Semester

ICPHY2C002T

B.Sc(H)-M.Sc. Physics			
Semester :	II	**Type:**	Core
Course Name:	Electricity and Magnetism	**Course Code:**	ICPHY2COR01T
Credits:	4	**L T P:**	3-1-0

Unit-I

Vector algebra: Gradient, Divergence, Curl, second derivatives and fundamental theorems for divergence and curl. Electrostatics: Coulomb's law, principle of superposition, Concept of electric field, electric potential, Electric field and potential due to discrete and continuous charge distribution, relation between electric intensity and potential, electric dipole and dipole moment, electric potential and field at any point due to a dipole, Gauss's theorem in electrostatics, conductors, capacitor, electrostatics energy.

Unit-II

Dielectrics: non-polar molecules, Polar molecules, Polar and non-polar molecules in an electric field, polarization,Electric polarization of matter, polarization charges and polarization vector, electric susceptibility Electric polarization vector, Electric field in dielectric, Gauss law in dielectric, Relation between three electric vectors: displacement vector (D), electric vectors (E), and polarization vectors (P), capacitance, Effect of dielectric on capacitance.

Unit-III

Magnetostatics: Concept of magnetic field, Biot-Savart's law, application of Biot-Savart's law, Ampere's circuital law.Gauss's law of magnetism, Magnetic field: Magnetic field inside a toroid, solenoid, magnetic dipole moment, magnetisation of matter, relation between magnetic field (B), magnetism intensity(H) and magnetization vector (M), Magnetic susceptibility and permeability

Unit-IV

Electromagnetic induction: Magnetic flux, Faraday's experiments, Faraday's law of electromagnetic induction, Lenz's law, Self induction, Mutual induction, energy stored in a magnetic field Alternating current circuits. Ballistic galvanometer: current and charge sensitivity, electromagnetic damping, logarithmic damping.

Unit-V

Current electricity: electric current, current density, Equation of continuity, surface charge density, Ohm's law, Relation between current density and resistivity, electric power, electric energy, current and power in an electrical circuit, Joule's law in electricity.

Text and Reference Books:

1. Edward M. Purcell, Electricity and Magnetism, (McGraw-Hill Education).
2. Arthur F. Kip, Fundamentals of Electricity and Magnetism, (Mc Graw-Hill).
3. J.H.Fewkes &John Yarwood, Electricity and Magnetism, (Oxford Univ. Press).
4. David J. Griffiths, Introduction to Electrodynamics, (Benjamin Cummings).

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ICPHY2C002L

B.Sc(H)-M.Sc. Physics			
Semester :	II	**Type:**	Core
Course Name:	Electricity and Magnetism Lab	**Course Code:**	ICPHY2COR02L
Credits:	2	**L T P:**	0-0-4

1. Resistance

(i) To test a diode and transistor using (a) a multimeter and (b) a CRO.

(ii) To measure (a) voltage, (b) frequency and (c) phase difference using a CRO .

(iii) To study the characteristics of a series RC circuit using R, L and C.

(iv) To determine a low resistance by Carey Foster's Bridge.

(v) To determine a low resistance by a potentiometer.

(vi) To determine high resistance by leakage of a capacitor.

2. Ballistic Galvanometer

(i) To determine the (a) charge sensitivity and (b) current sensitivity of B.G.

(ii) To determine the (a) logarithmic decrement and (b) CDR of a B.G.

3. Capacitance

(i) To determine the ratio of two capacitances by de Sauty's bridge.

(ii) To determine the dielectric constant of a dielectric placed inside a parallel plate capacitor using a B.G.

4. Self & Mutual Inductance

(i) To determine self inductance of a coil by Anderson's bridge using AC.

(ii) To determine self inductance of a coil by Rayleigh's method.

(iii) To determine the mutual inductance of two coils by absolute method using a B.G.

5. A.C Circuits

(i) To study the response curve of a series LCR circuit and determine its(a) resonant frequency, (b) impedance at resonance and (c) quality factor Q, and (d) band width.

(ii) To study the response curve of a parallel LCR circuit and determine its (a) anti-resonantfrequency and (b) quality factor Q.

Text Book sand References:

1. Geeta Sanon, B.Sc Practical Physics, (R.Chand &Co).
2. B.L.Workshop and H.T. Flint, Advanced Practical Physics, (Asia Publishing House, New Delhi).
3. Indu Prakash and Ramakrishna, A Text Book of Practical Physics, (Kitab Mahal, New Delhi).
4. D.P. Khandewal, A Laboratory Manual of Physics for Undergraduate Classes, (VaniPublication House, New Delhi).

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ICPHY2C003T

B.Sc(H)-M.Sc. Physics			
Semester :	II	**Type:**	Core
Course Name:	Waves and Optics	**Course Code:**	ICPHY2COR03T
Credits:	4	**L T P:**	3-1-0

Unit-I

Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats). Superposition of N collinear Harmonic Oscillations with (1) equal phase differences and (2) equal frequency differences.Lissajous Figures with frequency ratio (1:1 and 1:2).

Unit-II

Plane and Spherical Waves. Longitudinal and Transverse Waves. Travelling Waves. Wave Equation. Pressure of a Longitudinal Wave. Energy Transport. Intensity of Wave. Velocity of Transverse Vibrations of Stretched Strings. Velocity ofLongitudinal Waves in a Fluid in a Pipe.Standing (Stationary) Waves in a String, Energy of Vibrating String. Transfer of Energy. Normal Modes of Stretched Strings. Melde's Experiment. Longitudinal Standing Waves and Normal Modes.

Unit-III

Electromagnetic nature of light. Huygens Principle. Temporal and Spatial Coherence. Interference:Division of amplitude and wavefront.Young's double slit, Lloyd's Mirror and Fresnel's Biprism. Phase change on reflection: Stokes' relations. Interference in Thin Films, Fringes of equal inclination, Fringes of equal thickness, Newton's Rings. Michelson Interferometer,Visibility of Fringes. Fabry-Perot interferometer.

Unit-IV

Diffraction:Fraunhofer and Fresnel, Single slit. Circular aperture, Resolving Power of a telescope.Double slit. Multiple slits. Diffraction grating. Resolving power of grating. Fresnel's Half-Period Zones for PlaneWave. Explanation of Rectilinear Propagation of Light. Theory of a Zone Plate: Multiple Foci of a Zone Plate. Fresnel's Integral, Fresnel diffraction pattern of a straight edge, aslit and a wire.

Unit-V

Introduction to polarization, Types of polarization- plane, circular, elliptical. Polarization by reflection of light, Brewster's law, Law of Malus, Polarisation by double refracting uniaxial crystal , Linear polarizer (Polaroid), Fabrication of linear polarizer by Nicol prism.

Text and Reference Books

1. Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill.
2. Fundamentals of Optics, F.A. Jenkins and H.E. White, 1981, McGraw-Hill
3. Principles of Optics, Max Born and Emil Wolf, 7th Edn., 1999, Pergamon Press.
4. Optics, Ajoy Ghatak, 2008, Tata McGraw Hill.
5. The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons.
6. The Physics of Waves and Oscillations, N.K. Bajaj, 1998, Tata McGraw Hill.

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ICPHY2C003L

B.Sc(H)-M.Sc. Physics			
Semester :	II	**Type:**	Core
Course Name:	Waves and Optics Lab	**Course Code:**	ICPHY2COR04L
Credits:	2	**L T P:**	0-0-4

1. Springs

(i) To study the motion of a spring and calculate (a) spring constant (b) value of g, and modulus of rigidity.

(ii) To investigate the motion of coupled oscillators.

2. Melde's Experiment

(i) To determine the frequency of an electricity maintained tuning fork by Melde's experiment.

(ii) To verify λ^2-T law by Melde's experiment.

3. Interference

(i) To determine wavelength of sodium light using Fresnel bi-prism.

(ii) To determine wavelength of sodium light using Newton'srings.

(iii) To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped film.

(iv) To determination wavelength of sodium light Michelson's interferometer.

4. Diffraction

(i) To determine the diameter of a thin wire by studying the diffraction produced by it.

(ii) To determine the wavelength of laser light using diffraction of single slit.

(iii) To determine the wavelength of (1) sodium and (2) mercury light using plane diffraction grating.

(iv) To determine the dispersive power of a plane diffraction grating.

(v) To determine the resolving power of a plane diffraction grating.

(vi) To determine the (1) wavelength and (2) angular spread of He-Ne laser using plane diffractiongrating

(vii) To study the polarization of light by reflection and to determine the polarizing angle for air-glass interface.

(viii) To measure the intensity using photosensor and laser in diffraction patterns of single and double slits.

Text Books and References:

1. B.L.Workshop and H.T. Flint, Advanced Practical Physics, (Asia Publishing House,New Delhi).
2. InduPrakash and Ramakrishna, A Text Book of Practical Physics, (Kitab Mahal, New Delhi).
3. D. P. Khandewal, A Laboratory Manual of Physics for Undergraduate Classes, (VaniPublication House, New Delhi).

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ICPHY1I001T

B.Sc(H)-M.Sc. Physics			
Semester :	II	**Type:**	Generic Elective
Course Name:	General Physics	**Course Code:**	ICPHY2GE3T
Credits:	4	**L T P:**	3-1-0

Unit-I

Laws of Thermodynamics-I: Thermodynamic Description of system: Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between C_P and C_V, Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Coefficient, Reversible and irreversible processes.

Unit-II

Laws of Thermodynamics-II: Second law and Entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes, Entropy-temperature diagrams, Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Third law of thermodynamics. Concept of absolute zero temperature.

Unit-II

Kinetic Theory of Gases: Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zeroth Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) and its applications to specific heat of gases; mono-atomic and diatomic gases.

Unit-II

Theory of Radiation: Blackbody radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.

Unit-II

Electrostatics: Electrostatic Field, electric flux, Gauss's theorem of electrostatics. Applications of Gauss theorem- Electric field due to point charge, infinite line of charge, uniformly charged spherical shell and solid sphere, plane charged sheet, charged conductor.

Magnetism: Magnetostatics: Biot-Savart's law and its applications- straight conductor, circular coil, solenoid carrying current. Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Brief introduction of dia-, para- and ferro-magnetic materials.

Reference Books:

1. Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.
2. A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
3. Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
4. Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W.Sears and G.L. Salinger. 1988, Narosa
5. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
6. Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education
7. Electricity & Magnetism, J.H. Fewkes & J.Yarwood. Vol. I, 1991, Oxford Univ. Press

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ICPHY1I001L

B.Sc(H)-M.Sc. Physics			
Semester :	II	**Type:**	Generic Elective
Course Name:	General Physics Lab	**Course Code:**	ICPHY2GE3L
Credits:	2	**L T P:**	0-0-4

1. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2. To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
3. To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
4. To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method.
5. To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).
6. To study the variation of Thermo-Emf of a Thermocouple with Difference of Temperature of its Two Junctions.
7. (i) To test a diode and transistor using (a) a multimeter and (b) a CRO.
   (ii) To measure (a) voltage, (b) frequency and (c) phase difference using a CRO .
   (iii) To determine a low resistance by Carey Foster's Bridge.
8. To determine the (a) charge sensitivity and (b) current sensitivity of B.G.
9. To determine the ratio of two capacitances by de Sauty's bridge.
10. To determine self inductance of a coil by Anderson's bridge using AC.
11. To determine the mutual inductance of two coils by absolute method using a B.G.
12. To study the response curve of a series LCR circuit and determine its(a) resonant frequency, (b) impedance at resonance and (c) quality factor Q, and (d) band width.
13. To study the response curve of a parallel LCR circuit and determine its (a) anti-resonant frequency and (b) quality factor Q.

Text Book sand References:

1. Geeta Sanon, B.Sc Practical Physics, (R.Chand &Co).
2. B. L. Workshop and H.T. Flint, Advanced Practical Physics, (Asia Publishing House, New Delhi).
3. Indu Prakash and Ramakrishna, A Text Book of Practical Physics, (Kitab Mahal, New Delhi).
4. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
5. D.P. Khandewal, A Laboratory Manual of Physics for Undergraduate Classes, (Vani Publication House, New Delhi).

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2020-21

Recommendation of Scheme/Courses Opted for first two semesters

SEMESTER	COURSE OPTED	COURSE NAME	Credits
I	Ability Enhancement Compulsory Course-I	English Foundation	2
	Core course-I	Mathematical Physics-I Core	4
	Core Course-I Practical/Tutorial	Mathematical Physics-I Lab Core	2
	Core course-II	Mechanics Core	4
	Core Course-II Practical/Tutorial	Mechanics Lab Core	2
	Generic Elective -1	Chemistry-I GE	4
	Generic Elective -1 Practical/Tutorial	Chemistry Lab-I GE	2
		Total credits	**20**
II	Ability Enhancement Compulsory Course-II	Environmental Science Foundation	2
	Core course-III	Electricity and Magnetism Core	4
	Core Course-III Practical/Tutorial	Electricity and Magnetism Lab Core	2
	Core course-IV	Waves and Optics Core	4
	Core Course-IV Practical/Tutorial	Waves and Optics Lab Core	2
	Generic Elective -2	Introduction to Computers GE	4
	Generic Elective -2 Practical/Tutorial	Computer Lab GE	2
		Total Credits	**20**

Generic Electives for other department

Generic Elective -3	General Physics IDC	4
Generic Elective -3 Practical/Tutorial	General Physics Lab IDC	2

31/01/2020 31/1/20 31/01/2020 31/01/2020