Program Outcomes

T. Y. B. Sc.

1) The T. Y. B. Sc., students learn most of the science concepts.
2) The students perform the practicals and hence students can apply practical knowledge.
3) The knowledge gained by T. Y. B. Sc. students can be beneficial in their future studies and jobs.
4) The T. Y. B. Sc. students may do the research in specific branch.

Specific Program Outcomes

T. Y. B. Sc. (Physics)

Specific Program Outcomes:

5) After completion of T. Y. B. Sc.(Physics), students learn about different branches in physics like classical mechanics, quantum mechanics, electrodynamics , nuclear physics, electronics, thermodynamics and statistical physics, solid state physics, mathematical methods in physics, atomic and molecular physics, laser, renewable energy sources etc.
6) The students understand and perform practical's on surface tension, viscosity, modulii of elasticity, computer interfacing , optics, thermodynamics, electronics, C-programming , lasers etc.
7) The projects performed by the students can be beneficial in their future studies and jobs.

Class- F. Y. B. Sc.

Semester 1: Mechanics and Properties of matter

Subject- Physics Paper PH-111 (Mechanics and Properties of matter)

Course Outcomes -

1) Understand the basic Newton's laws of motion and its applications.
2) Understand the basic concepts of the work done, Potential energy etc.
3) Understanding of basic terms of viscosity, Bernoulli's Theorem and its applications.
4) Understand the stress, strain, Hooke's law etc.
5) Basic knowledge of the Young's Modulus, Bulk modulus, Modulus of rigidity.
6) Aware about the problem solving.

Class- F. Y. B. Sc.

Semester 1: Physics Principles and Applications

Subject- Physics Paper PH-112 (Physics Principles and Applications)

Course Outcomes -

1) Understand the basic structure of atom and spectrum of hydrogen atom.
2) Understand LASER and its properties.
3) Understand bonding mechanism of molecules and its types.
4) Understand the Electromagnetic waves and its spectrum.
5) Understand the applications of EM waves.
6) Develop problem solving skills.

Class- F. Y. B. Sc.

Semester 1: Practical Paper

Subject- Physics Paper PHY-113 (Practical Paper)

Course Outcomes-

1) Understand the basic Knowledge of Vernier caliper, micro screw gauge.
2) Study of Young's Modulus, Modulus of rigidity.
3) Students know about the Poisson's ratio.
4) Students know about practical Knowledge of LASER.
5) Students know about IV characteristics of solar cell.

Class- F. Y. B. Sc.

Semester 2: Heat and Thermodynamics

Subject- Physics Paper PH-121 (Heat and Thermodynamics)

Course Outcomes -

1) Understand the Zeroth of thermodynamics, equation of state, Van der waal's equation.
2) Understand the Thermodynamic processes such as Adiabatic, Isothermal, Isobaric and Isochoric processes and its applications.
3) Students know about First and second law of thermodynamics.
4) Understand the Cornot Cycle and its efficiency
5) Knowledge about otto engine and diesel engine and its applications.
6) Basic knowledge about various thermometers such as gas filled thermometers, bimetallic thermometers, Platinum resistance thermometer etc.

Class- F. Y. B. Sc.

Semester 2: Electricity and Magnetism

Subject- Physics Paper PH-122 (Electricity and Magnetism)

Course Outcomes-

1) Understand the basic concept of the electric force, electric field and electric potential etc.
2) Understand Coulomb's law and Gauss's law and its applications.
3) Understand Biot-Savart and Ampere's Circuital laws and its applications for problem solving.
4) Understand Diamagnetic materials, Paramagnetic materials, Ferromagnetic materials and Antiferromagnetic materials.
5) Problem solving ability for Electricity and Magnetism.

Class- F. Y. B. Sc.

Semester 2: Electricity and Magnetism

Subject- Physics Paper PHY-123 (Practical Paper)

Course Outcomes-

1) Understand the concept of temperature coefficient using thermistor and thermal conductivity using Lee's method,
2) Obtain the specific heat of Graphite.
3) Students know how to calculate the solar constant.
4) Basic knowledge of charging and discharging of capacitor.
5) Understand LR, LCR Circuits.
6) Students know about Kirchhoff's laws and its applications

S.Y.B.Sc.

Physics (Sem- I Paper –I)

Course Code and Title: PH-211 Mathematical Methods in Physics I

Course Outcomes:

1) Understand the basic knowledge of the mathematics such as trigonometric functions, exponential functions etc.
2) Understand the concept of partial differentiation.
3) Students know the dot product cross product, scalar triple product, Vector triple product etc.
4) Students also understand the divergence, gradient, curl concepts etc.
5) Solve the problems on each and every topic.

S.Y.B.Sc.

Physics (Sem- I Paper –II)

Course Code and Title: PH-212 Electronics

Course Outcomes:

1) Understanding of Kirchhoff's laws and Thevinin's & Norton's theorems, maximum power transfer theorem.
2) Learning of construction, working and applications of BJT and UJT.
3) Understanding Operational amplifiers and applications.
4) Understanding concept of Oscillators.
5) Learning basics of power supply and regulators.
6) Learning of number systems, logic gates and De Morgan's theorems.

Class- S. Y. B. Sc.

S.Y.B.Sc. Physics (Sem- II Paper –I)

Subject- Physics Paper PH-221 (Oscillations, Waves and Sound)

Course Outcomes:

1) To understand the Oscillations types according to variations of amplitude, velocity and frequency.
2) To study the Energy and quality of oscillations.
3) To understand the electrical oscillations and applications of oscillations.
4) To understand the types and formation of waves, energy of wave.
5) To understand the Doppler Effect and its applications.
6) To understand properties of sound.
7) To demonstrate problem solving skills in all covered topic.

Class- S. Y. B. Sc.

S.Y.B.Sc. Physics (Sem- II Paper –II)

Subject- Physics Paper PH-222 (Optics)

Course Outcomes:

1) Students get the knowledge of lenses and aberration in lenses.
2) Students also understand about optical instruments such as simple microscope, compound microscope, Ramdens eyepiece, Huygens eyepiece etc.
3) Understand the difference between interference and diffraction ,types of diffractions , Newton's rings etc.
4) Understand the basic concepts of the polarization, law of Malus, Brewster's law Nicol Prism etc.

S.Y.B.Sc.

Physics (Paper –III)

Practical Course Code and Title: PH-223

Course Outcomes:

1) Student can get technical knowledge laboratory instruments.
2) Drawing of graphs and analysis from graphs
3) Analysis from calculations and get the expected results.
4) Students understand the basic concepts and get knowledge
5) Student can get experimental knowledge.

T. Y. B. Sc. (Physics)

Course code and title: PH-331(Sem III)

Title: Mathematical Methods in Physics II

Course Outcomes:

1) Understand the Cartesian, Spherical, Cylindrical co ordinate system, Orthogonal Curvilinear co-ordinate system etc.
2) Students know about Newtonian theory of relativity, Galilean transformation equation.
3) Understand the Michelon Morley Experiment and energy mass relation.
4) Students know about differential equations, Bessel's differential equations, Hermite differential equations etc.
5) Understand the concepts of Legendre, Hermite Polynomials and concept of orthogonality.

T. Y. B. Sc. (Physics)

Course code and title: PH-332(Sem III)

Title: Solid State Physics

Course Outcomes:

1) Understanding of Lattice, Translational vectors, symmetry operations, 2D&3D lattices, Miller Indices, Some crystal structures and reciprocal lattice.
2) Understanding of x ray diffraction and experimental methods, and characterization techniques like TGA, UV-Visible spectroscopy, SEM etc.
3) Learning of Free electron and Band theory, Origin of band gaps.
4) Understanding magnetism and its types as well as concept of superconductivity.

T. Y. B. Sc. (Physics)

Course code and title: PH-333(Sem III)

Title: Classical Mechanics

Course Outcomes:

1) Understand the Newton's laws, Rocket Motion, Projectile Motion.
2) Understand the Motion of a charged particle in constant electric field, magnetic field and electromagnetic field.
3) Students know the concept of center of mass concept.
4) Understand the concept of central force, Kepler's laws.
5) Understand the concept of elastic and inelastic scattering in Lab and CM frame.
6) Students know Langrangian and Hamiltonian method for problem solving.
7) Understand the concept of Canonical Transformation and Poisson's Bracket.

T. Y. B. Sc. (Physics)

Course code and title: PH-334(Sem III)

Title: Atomic and Molecular Physics

Course Outcomes:

1) To understand the composition of atom and atomic spectra.
2) To understand the one and two valence electron system also getting ideas about spectral terms and coupling system.
3) To understand the Zeeman Effect and its types.
4) To understand the nature of X-ray and its applications.
5) To understand the Molecular spectroscopy and its energy levels.
6) To demonstrate problem solving skills in all covered topic.

T. Y. B. Sc. (Physics)

Course code and title: PH-335(Sem III)

Title: Computational Physics

Course Outcomes:

1) Understand basic concepts of flowchart and algorithm.
2) Write the algorithm and to draw the flowchart of simple problems
3) Know about the basic concepts and syntax of C programming language.
4) Understand the graphics in C programming language.
5) Students know that how to write C program in Physics Problems.
6) Students aware about the C programming language.
7) Students are able to write any C program and apply in many applications.

T. Y. B. Sc. (Physics)

Course code and title: PH-336(Sem III)

Title: Renewable Energy Sources

Course Outcomes:

1) Students know that Conventional and non-conventional energy sources .
2) Understand the concept of Photovoltaic and Photothermal, working of liquid flat plate collector and photovoltaic cell.
3) Understand the biomass energy and advantages and disadvantages of biomass energy.
4) Understand the wind energy and solar energy as alternative energy sources.

T. Y. B. Sc. (Physics)

Course code and title: PH-341(Sem IV)

Title: Classical Electrodynamics
Course Outcomes:

1) To understanding of the electric force, field and potential. Work out electrostatic field and potential of simple charge distributions using Coulomb's law and Gauss's law.
2) To understanding of the dielectric and effect on dielectric due to electric field.
3) Demonstrate an understanding of the magnetic field for steady currents using Biot-Savart and Ampere's laws and magnetization of materials.
4) Demonstrate quantitative problem solving skills in all the topics covered.

T. Y. B. Sc. (Physics)

Course code and title: PH-342(Sem IV)

Title: Quantum Mechanics

Course Outcomes:

1) Understanding Matter Waves, DeBroglie hypothesis, Wave Particle duality, Heisenberg's Uncertainty Principle, Electron Diffraction Experiment.
2) Understanding Schrödinger's time and independent Equation, Probability current density and Equation of continuity.
3) Studying a few applications of Schrodinger's steady state Equation.
4) Studying Rigid Rotator and Hydrogen atom Problems
5) Understanding concept of operators in Quantum Mechanics.

T. Y. B. Sc. (Physics)

Course code and title: PH-343(Sem IV)

Title: Thermodynamics and Statistical Physics

Course Outcomes:

1) Understand assumptions of Kinetic Theory of gases.
2) Understand Transport Phenomena of Viscosity ,Thermal conductivity and Diffusion.
3) Know the students about enthalpy, Entropy, Internal Energy, Helmholtz Functions.
4) Understand the Maxwell's relations and basic concepts of Joule – Thomson's effect and its applications.
5) To understand the basic concepts of probability and its problems, Gaussian probability distribution.
6) The students know about the ensembles. To understand the microcananical, canonical and grandcananical ensembles and its applications.
7) The students know about the how to apply the statistics. To understand the Various statistics like Maxwell-Boltzmann Statistics, Bose-Einstein Statistics and Fermi-Dirac Statistics.
8) How to solve the problems in Thermodynamics and Statistical Physics.

T. Y. B. Sc. (Physics)

Course code and title: PH-344(Sem IV)

Title: Nuclear Physics

Course Outcomes:

1) To understand Basic properties of nucleus and its classification.
2) To understand concept of natural and artificial radioactivity and properties of radioactive material.
3) Students also get ideas of properties of nuclear forces, nuclear reactions and nuclear energy.
4) Students understand basic idea of nuclear accelerator and detector. Students also know the type of accelerator and detector.
5) Acquire the corresponding skills of mutual learning and teamwork in laboratory settings.

T. Y. B. Sc. (Physics)

Course code and title: PH-345(Sem IV)

Title: Electronics

Course Outcomes:

1) Learning about Special Purpose Diodes Photodiodes Varactor and Optocoupler
2) Understanding Transistor Amplifier and Classification of Amplifiers like class A,B,C.
3) Understanding Field Effect Transistor, MOSFET ,Applications of JFET (Variable Resistor, Electronic Switch Analog Multiplexer)
4) Study of Operational Amplifier, Applications like Opamp as Integrator, Differentiator, Integrator, Instrumentation Amplifier.
5) Learning about concepts in digital electronics.

T. Y. B. Sc. (Physics)

Course code and title: PH-346(Sem IV)

Title: LASER

Course Outcomes:

1) Students understand the difference between ordinary and laser.

2) Understand the basic conditions of laser and charecteristics of laser.

3) Students know the types of lasers such as ruby laser, Diode Laser HeNe Laser, CO2 Laser etc.

4) Students learn the applications of laser.

T. Y. B. Sc. (Physics)

Course code: PH-347

Title: Practical Paper -I

Course Outcomes:

1) Performing the practical's related to surface tension by different methods.
2) Performing the practical's related to Thermal conductivity by different methods.
3) Performing the practical's related to Optics like Interference by Lloyd's mirror, Resolving power.
4) Performing the practical's like Obtaining Planck's constant, e/m by Thompson's method, Resistivity by four probe method.
5) Performing the practical of finding the band gap of a diode.
6) Overall developing the practical skills.

T. Y. B. Sc. (Physics)

Course code: PH-348

Title: Practical Paper -II

Course Outcomes:

1) Understand the basic concepts in electronics.
2) Perform the practicals in computer interfacing.
3) Write algorithm, flowchart and C-Program for Bi-section method, Newton Raphson method, Trapezoidal rule, Simpson's 1/3rd rule etc.
4) The Students know to how to write any C-Program.
5) The T.Y.B.Sc students learn the Turbo-C Software.

T. Y. B. Sc. (Physics)

Course code: PH-349

Title: Practical Paper –III

Course Outcomes:

1) The Students know the research in physics.
2) The students have scope to select project in liking area of Physics.
3) The students know how to make the referencing and students also prepare the research paper.
4) The students can take the observations and make the analysis of the observations.
5) The students find the result and conclusion of the project.
6) Students know about how to write the project report.