Shri Shivaji Education Society Amravati's

Shri Shivaji Arts, Commerce and Science College, Motala, Dist. Buldhana

Program Outcomes & Course Outcomes

Department of Physics

Name of the Program: B.Sc. PHYSICS

Program Outcomes

After the completion of B. Sc. Physics program there are various options available for science students, they can pursue a master degree in physics, work in related field, and can look also towards the professional job-oriented courses. Students after the graduation in science faculty can also eligible and apply to the various competition examinations such as UPSC, MPSC, SSC, Banking, RRB etc.

After successful completion of three-year degree program in Physics, a student will be able to:

• Understand the depth knowledge of various subjects and topics of physics.

• Develop Scientific temper and Scientific thinking.

• Demonstrate skills and competencies to conduct scientific experiments.

• Inculcate the scientific treatment in the students and outside the scientific community.

Course Outcomes

B. Sc. part-I Semester I

Students will able to

• Know the Newton's law of gravitation, Kepler's laws of planetary motion

• Study of acceleration due to gravity, variation with altitude and depth, gravitational field, gravitational potential, intensity due to uniform solid sphere at a point inside and outside the sphere.

• Have the knowledge of the translational, vibrational & rotational motion.

• Find out moment of inertia.

• Understand the concept of linear & angular momentum and their conservations.

• Understand the concept of SHM, Differential equations and solution.

• Know the damped & forced harmonic motion, Resonance.

• Know the concept of elasticity & plasticity, different elastic constants.

• Know the viscous properties of fluid. understand Bernoulli's theorem, Reynold's number, study property of matter, surface tension.

• Understand above concepts through experiments in laboratory.

• Develop numerical solving technique in students.

Course Outcomes B.Sc. Physics

B. Sc. I Semester-II

Students will able to

• Have knowledge about the kinetic theory of gases.

• Understand Brownian motion, Avogadro's number & specific heat.

• Study Transport phenomenon in gases and understand the concept through experiments in laboratory.

• Know the laws of thermodynamics, Carnot's heat engine & Carnot's theorem, Entropy.

• Know the Joule-Thomson effect.

• Understand liquification of hydrogen & helium.

• Study thermodynamic variables.

• Know the motion of charged particle in electric & magnetic fields, working principle of electron gun, Discharge tube & mass spectrograph.

• Study linear (Linac) accelerator & Cyclotron.

• Understand above concepts through experiments in laboratory and develop numerical solving technique in students

• Know the network theorems, understand Ballistic galvanometer, study Varying current.

• Know the concept of alternating current, understand applications of j-operator & complex number, study resonance & transformer.

• Understand above concepts through experiments in laboratory and develop numerical solving technique in students.

Course Outcomes B.Sc. Physics

B. Sc. II Semester-III

Students will able to

• Have a knowledge about the Scalar & Vector fields, Gradient, Divergence & Curl

• Study Ampere's law. Understanding the concepts through experiments in laboratory.

• Know the Faraday's law, understanding Maxwell's equation

• Study Poynting theorem

• Know the semiconductors, understand Hall effect and study of different types of diodes.

• Have a knowledge about the BJT, types & applications of FET.

• Study IC, OP-AMP.

• Know the special theory of relativity, length contraction, Time dilation, Einstein's mass-energy relation.

• Develop numerical solving technique in students

• Know the structure of earth, Atmosphere, earthquakes.

• Understanding above concepts through experiments in laboratory.

• Develop numerical solving technique in students.

Course Outcomes B.Sc. Physics

B. Sc. II Semester-IV

Students will able to

• Know the lens system, understand interference in thin films.

• Study Newton's ring.

• Know the types of diffraction.

- To understand, diffraction through plane transmission grating.
- Study zone plates.
- Know the Polarization, Brewster's law.
- Study Nicol's prism.
- Understanding the mechanism of Laser, types & applications of laser, concept of holography.
- Have a knowledge about the mechanism of Optical fiber.
- Understand types & applications of optical fiber, study optical communication system
- Understanding the types of renewable energy sources, concept of solar energy, study photovoltaic cell.
- Understand above concepts through experiments in laboratory and develop numerical solving technique in students

Course Outcomes B.Sc. Physics

B. Sc. III Semester-V

Students will able to

- Have a knowledge about the black body radiation.
- Study of Plank's radiation law & photoelectric effect.
- Study Compton effect & Heisenberg's uncertainty principle.
- Know the Schrodinger's wave equation.
- Understanding mathematical operator's.
- Study motion of particle in rectangular box.
- Know the different atomic models.
- Understand quantum numbers.
- Study Raman effect.
- Have the knowledge about the theory of nucleus.
- Understand alpha & beta decay.
- Study Nuclear reaction & reactor.
- Know the h-parameters.
- Understand concept of amplifier, study Noise & distortion in amplifier.
- Know the concept of feedback, electronic oscillators, study of multivibrators.
- Understand above concepts through experiments in laboratory and develop numerical solving technique in students

Course Outcomes B.Sc. Physics

B. Sc. III Semester-VI

Students will able to

- Have the knowledge about the phase space, unit cell, micro & macro states, Boltzmann's entropy relation

- Study Maxwell-Boltzmann statistics & its applications.

- • Know the concept of boson & fermions.
- Understand Bose-Einstein statistics & its applications.
- Study Fermi-Dirac statistics & its applications.
- Know the crystalline & amorphous solids.
- Understand different crystal structures & X-ray diffraction, crystal defects.
- Know the concept of drift motion.
- understand Fermi energy.
- Study band structure in solids.
- Have knowledge about the concept of magnetism.
- Understand types of magnetic materials.
- Study Hysteresis.
- Know the concept of superconductors.
- Understand types of superconductors & BCS theory.
- Study Basic concepts of nanotechnology.
- Understand above concepts through experiments in laboratory and develop numerical solving technique in students.