DEPARTMENT OF PHYSICS

Municipal Post Graduate College, Mussoorie

COURSE NAME: Mechanics & Properties of Matter (Theory)

COURSE OUTCOME

This theoretical course on mechanics will equip the students with knowledge and skills in the field classical mechanics. This knowledge will be useful in the following ways:

CO1. Students will be able to explain the linear and rotational motion of classical particles.

CO2. Students will be at ease while studying advanced subjects on motion of celestial bodies and the motion of rockets.

CO3. This knowledge will be helpful in jobs in the field of space science.

CO4. This course will build a strong foundation for various applied fields in science and technology like mechanical engineering.

CO5. This knowledge will open many opportunities in the field of science and technology and improve job prospects in the area.

COURSE NAME: Mechanics & Properties of Matter– Lab

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn about the importance of accuracy in different types of measurements.

CO2. Knowledge gained after completing this course will equip them with skills that will be helpful in the experimental study of other advanced physics practical courses.

CO3. Student will acquire technical skills that can will be used in jobs like lab assistant or lab technician in the laboratory of mechanics.

CO4. Students completing this lab course will acquire a level of confidence that will helpful in solving real practical problems like repairing items used in day today life.

COURSE NAME: Electricity and Magnetism

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Knowledge acquired in this course will help them understand theoretical part of functioning of various electrical devices.

CO2. They will learn how to minimize losses in long distance power transmission a fundamental concept used in transformers.

CO3. This knowledge will provide a strong fundamental base in electromagnetism and prepare them for higher studies in this branch of physics.

CO4. This course will be very useful for students studying electrical engineering.

CO5. The basics taught in this course are used in almost every branch of science and technology.

CO6. This course will improve their communication skills in the field of science and technology.

COURSE NAME: Electricity and Magnetism – Lab

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn how to measure current, voltage, resistance, capacitance, inductance etc. using various types of measuring devices.

CO2. They will learn how to make different types of electric-circuits.

CO3. Practical knowledge acquired in this course will provide them a hand-on experience on handling various electrical devices.

CO4. This knowledge will help them in jobs such as a lab assistant or a lab-technician in laboratories or departments in the fields of electricity and electronics.

CO5. They will be able to understand advance courses in the field of electricity and magnetism easily.

COURSE NAME: Heat and Thermodynamics

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Concepts of heat and temperature and their relation to energy will help them in understanding the applications of heat energy transfer in our day-today life.

CO2. Theoretical knowledge of the course will be helpful to understand the concepts of mechanical energy , heat energy, electrical energy and their conversions from one form to another and the cost of conversion.

CO3. The knowledge of this course will provide them opportunities of work in industry of heating and refrigeration.

CO4. Concepts of thermodynamics and statistical mechanics taught in this course will equip them with the knowledge that will be helpful in higher studies in this branch of physics.

COURSE NAME: Heat & Thermodynamics-Practical

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn about the mechanism of heat transfer from hot to cold or cold to hot systems.

CO2. They will understand the concept of heat transfer that cannot occur on its own (Heat transfer from a cold body to a hot bodies).

CO3.

COURSE NAME: Optics

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Students completing this course will be able to teach basics optics at school level.

CO2. Knowledge gained in this course will enable them to understand advance courses on diffraction, interference and polarization.

CO3. Knowledge of acoustics of buildings taught in the course will be useful and can be applied in day-today life.

CO4. Theory of various experiments taught in the course will prepare them to understand the working of advance instruments/experiments in the field of optics.

CO5. With this knowledge they will get access to jobs in laboratories or industry in the field of optics or optical engineering.

COURSE NAME: Optics – Practical

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn how to use various optical instruments and acquire skills on how to make scientific measurements using them.

CO2. Practical knowledge on experiments such as newton's rings, refractive power, refractive index, Fresnel Bi-Prism , Young's double-slit experiment etc. will train them to handle research level equipment very comfortably.

CO3. With this lab course they will be able to work in any laboratory or industry in the field of optical engineering.

COURSE NAME: Elements of Modern Physics-Lab

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn basic experiments of modern physics and develop skills on experimental observations and calculations to obtain results.

CO2. Experiments such as Planck's constant, Ionization potential, wavelength of hydrogen spectrum, photo-electric effect, determination of e/m, and double and single slit experiments will quip them with skills that will be useful in their higher studies and research.

CO3. This practical course on modern physics will prepare them for jobs as a technician or lab-assistant in the field of science and technology.

COURSE NAME: Elements of Modern Physics

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student in this course will learn advance and introductory concepts of nuclear physics, quantum mechanics, particle physics, and high energy physics.

CO2. Knowledge of Schrodinger equations and their applications will prepare them for research level problems.

CO3. This course will be helpful to understand the distinction between the two mechanics: classical and quantum and importance of quantum-mechanics in physics.

CO4. With this knowledge students will be able to understand advance courses in nuclear-physics, quantum mechanics, particle physics etc.

CO5. This course will be very helpful for students pursuing higher studies in this branch of physics.

COURSE NAME: Quantum Mechanics

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. In this course student will learn physics that is used to describe behavior of matter and energy at atomic and sub-atomic level.

CO2. Quantum concepts have become a power full tool in physics and its knowledge will provide a strong foundation in quantum mechanics that will be very helpful in higher studies and research.

CO3. Schrodinger equations and its applications to various quantum particle system will inculcate problem solving skills in the students completing this course.

CO4. This branch of physics prepares the students to look at the physical problems and their solutions with a different perspective.

COURSE NAME: Quantum Mechanics-Lab

COURSE OUTCOME

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn and develop real problem solving skills in this course.

CO2. As solution of some problems would require numerical methods student will develop computation skills as well in the course.

CO3. As this course requires students to have some computational skills they will be learning computer languages too in the course.

CO4. Skills acquired in this course will be very helpful in the study of advance courses in theoretical physics.

Skill Enhancement Course (SEC)

Course Name: Electronics-I (Network Theorems, Solid State Devices, Rectifiers and Filters)

COURSE OUTCOME

Student completing this skill enhancement course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn about various types of solid state devices and their use in our day-today life.

CO2. Knowledge gained in this course will equip them with skills that can be used in the industry of electronics and semiconductor.

CO3. This course will be a motivating course for a carrier in the field of electronics.

Skill Enhancement course (SEC)

Course Name: Electronics-I (Amplifiers and Oscillators)

COURSE OUTCOME

Student completing this skill enhancement course will acquire skills & knowledge that can be used in the following ways:

CO1. Student will learn about advanced electronic- circuits and their applications in electronic instruments.

CO2. Knowledge of various types of amplifiers and oscillators will make them a technically sound person who can advance their knowledge further in the field of electronic instrumentation.

CO3. This knowledge will be helpful for them to work in the field of electronic engineering.

Skill Enhancement Course (SEC)

Course Name: Waves and Oscillations

Course outcome

Student completing this course will acquire skills & knowledge that can be used in the following ways:

CO1. Students studying this course will be acquiring skills that will be useful in understanding wave behavior in different matters.

CO2. Knowledge of mathematical tools like Fourier theorem and Fourier analysis in this course will equip them with skills that will be very helpful in higher studies.

CO3. Knowledge of production and application of waves will equip them with skills that can be helpful in understanding experimental aspects of wave- behavior.