"Education for Knowledge, Science, and Culture"
- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

KOLHAPUR (AUTONOMOUS)

M.Sc. I Syllabus (w.e.f. 2023-24)

M.Sc. (Physics) NEP-Semester-I
Course Code: DSC12PHY11
Paper title: Mathematical Physics (MP)
Total Credits: 4-credits

Course Outcomes: Mathematical Physics

After the completion of course, the student could able to:

CO-1) Well-versed with the Matrices.

CO-2) Understand the elementary ideas and have acquired facility with numerical tools forsolving mathematical problems in Complex Variables.

CO-3) understand the complications associated with the Fourier Series and Transform

CO-4) Learn about the concept of some special functions, Frobenius power series and polynomials.

M.Sc. (Physics) NEP -Semester-I
Course Code: DSC12PHY12
Paper title: Classical Mechanics (CM)
Total Credits: 4-credits

Course outcomes: Classical Mechanics

After the completion of course, students will attain

CO-1). Understanding of Mechanics and Lagrange's and Hamilton's theory.

CO-2) Gain basic knowledge of Canonical Transformation and Special Relativity and the evolutionary significance of it.

CO-3) Learn about the concept of canonical transformation, coupled oscillations

CO-4) Able to solve problems regarding classical mechanics.

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M.Sc. (Physics) NEP -Semester-I
Course Code: MIN12PHY11
Paper title: Research Methodology (RM)
Total Credits: 4-credits

Course Outcomes: Research Methodology

After the completion of course, the student could able to:

CO-1) Understand the meaning of research, research design.

CO-2) Understand the methods of data collection.

CO-3) Learn about various tool of literature survey

CO-4) Learn about Thin film deposition technics and also learn how to study properties and analysis of thin films.

M.Sc. (Physics) NEP Semester-I
Course Code: OEC12PHY11
Paper title: SSP-I (Semiconductor Physics)
Total Credits: 4-credits

Course Outcomes: Solid State Physics-I (Semiconductor Physics)

At the end of the course, students will be able to,

CO-1) get critical and systematic understanding of energy bands and charge carriers in Semiconductors.

CO-2) Learn the basics of excess carriers in semiconductors, Optical absorption, Luminescence, diffusion and drift of carriers.

CO-3) Provide a broad view of fabrication of p-n junctions and current flow throughat a junction, Capacitance of p-n junctions, heterojunction.

CO-4) Understand the concepts of solar photovoltaics.

M.Sc. (Physics) NEP-Semester-II
Course Code: DSC12PHY21
Paper title: Quantum Mechanics
Total Credits: 4-credits

Course Outcomes: Quantum Mechanics

At the end of the course, students will be able to,

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CO-1) understand basic concepts in the Origin and general formalism andrepresentation of states and quantum dynamics.

CO-2) develop theoretical knowledge of Angular Momentum operator

CO-3) develop important basic understanding about time independent perturbation theory, and its applications.

CO-4) develop important basic understanding angular momentum, operators, approximation method etc.

M.Sc. (Physics) NEP-Semester-II
Course Code: DSC12PHY22
Paper title: Condensed Matter Physics
Total Credits: 4-credits

Course Outcomes: Condensed Matter Physics

At the end of the course, students will be able to,

CO-1) Understand and describe various crystal structures in crystallography.

CO-2) Describe and understand fundamental concepts of crystal defects.

CO-3) Discuss different aspects of Dielectric, Magnetism & Superconductivity.

CO-4) Assess and critique Semiconductor theory, semiconductor materials, which will eventually lead to a general framework of concepts applicable across a variety of semiconductordevices.

M.Sc. (Physics) NEP Semester-II
Course Code: OEC12PHY21
Paper Title: Solid State Physics-II (Semiconductor Devices)
Total Credits: 4-credits

Course Outcomes: Solid State Physics-II (Semiconductor Devices)

At the end of the course, students will be able to,

CO-1) Understand the working, structure and operation and functions of (BJT), (JFET), MOSFET, MESFET, and diodes.

CO-2) Identify the problems and applications of Magneto-optic and acousto-optic, Piezoelectric, Electrostrictive and magnetostrictive effects.

CO-3) Acquire basic knowledge about Light emitting Diodes, OLED, Infrared LED, Photodetector, Photoconductor, Photodiode, p-n junction Solar cells, Semiconductor Lasers

CO-4) Learn the techniques of Thermistor, and sensors.