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

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

KOLHAPUR (AUTONOMOUS)

M.Sc. (Physics) (Semester-III and IV)

(Syllabus w.e.f. 2024-2025)

Paper title: Statistical Mechanics (DSC12 PHY31)

Course Outcomes:

CO1 Students learn the classical statistical tools as required for analyzing research data.

CO2 Students gained an understanding about classical statistics.

CO3 Students gained an understanding about Quantum statistics.

CO4 Students gained an understanding about problem solutions regarding classical Quantum statistics.

Paper title: Atomic and Molecular Physics (DSC12PHY32)

Course Outcomes:

CO1 The fundamental understanding of the atom Model for two valance electron.

CO2 Better understanding of the Zeeman and Paschen-Back Effect

CO3 The student shall gain a sound understanding of the basics of Microwave

CO4 The student shall gain a sound understanding of the basics Infra-Red Spectroscopy

Paper title: Solid State Physics- I (DSE12PHY31)

(Thin film deposition techniques- Magnetic and Electric properties)

Course Outcomes:

CO1 Provide a critical and systematic understanding on advanced Physical methods of thin film deposition like vacuum, evaporation, Chemical vapor deposition, sputtering, etc

CO2 Provide a critical and systematic understanding on advanced chemical methods of thin film deposition like Chemical bath deposition, electro deposition, Spray pyrolysis , (SILAR), Sol-gel, hydrothermal deposition techniques etc.

CO3 Learn the basics of the Nucleation growth processes and thickness measurement

CO4 Understanding of electrical and magnetic properties in solids, X-ray diffracti[illegible] SEM TEM, X-ray Energy Dispersive Analysis (EDX), X-ray photoelectron spectrosc[illegible]

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Paper title: Special Materials (DSE12PHY32)

Course Outcomes:

CO1 Understanding the components, types, properties, and applications of composites is crucial for fiber composite

CO2 Understanding the types and properties of glasses allows for their effective use in various industries, from construction goods to high-tech applications in electronics and optics.

CO3 Understanding and harnessing these properties, engineers and scientists can design and develop materials

CO4 Understanding these properties allows for the development and optimization of advanced devices across multiple industries.

M.Sc. II, Semester-IV

Paper title: Electrodynamics (DSC12PHY41)

Course Outcomes:

CO1 The fundamental understanding of the Maxwell's equations and propagation of plane electromagnetic wave

CO2 Better understanding of the Time dependent potentials and fields

CO3 The student shall gain a sound understanding of Electromagnetic fields and Radiations

CO4 The student shall gain a sound understanding of the Relativistic mechanics and covariance

Paper title: Nuclear and Particle Physics (DSC12PHY41)

Course Outcomes:

CO1 Acquire basic knowledge about Nucleon-Nucleon interaction, deuteron problem, np ,p-p and N-N scattering , nuclear forces etc.

CO2 Understand the Elementary ideas of alpha, beta and gamma decays, nuclear fission and fusion reactions mechanism.

CO3 Develop the understanding of cosmic rays and elementary particles and their properties.

CO4 Learn about the concept of particle physics classification like charge, spin, parity,

isospin, strangeness etc

Paper title: SOLID STATE PHYSICS- III (Physical properties of solid) (DSE12PHY41)

Course Outcomes:

CO-1) Understand the matter interaction Electronic Structure of Crystals

CO-2] Identify the problems and applications of Transport Properties of Metals.

CO-3] Acquire basic knowledge about Phonons, Plasmons, Polaritons, and Polarons

CO-4] Impart the knowledge about the Defects in crystals

Paper title: Nanostructured Materials (DSE12PHY42)

Course Outcomes:

CO1 Understand materials at the nanoscale. These methods enable the development of innovative materials with unique properties that are revolutionizing various industries.

CO2 Understand techniques and characterization methods continue to drive innovation, enabling the development of new materials

CO3 Able to learn materials combine the unique properties of nanotechnology with the functional requirements of biomaterials

CO4 Student is learning Nano-materials science brings numerous benefits

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