Yashwantrao Chavan College of Science, Karad

Department of Physics

Programme Outcomes

After completion of the B. Sc programme, the students will develop ability:

PO1: To develop the ability to identify, formulate, analyse and solve problems in in theoretical and experimental domains of physics at both curricular and research level through critical thinking.

PO2: To enable students to apply ICT based skills and making them scientific software literate to use in academics.

PO3: To encourage research culture, provide research ambience and develop related technical proficiency.

PO4: To develop attitude to pursue further research and finding placement avenues through it.

PO5: To inculcate academic and social ethical values among the students.

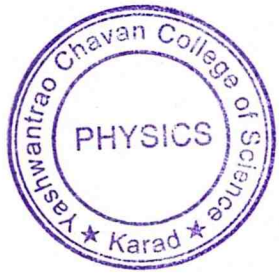
PO6: Student are able to apply the knowledge of core concepts of physics in semester exams, in the NET, SET and GATE, national level exams.

PO7: In day today access to study material, through presentations, students are capable enough to make use of Power Point presentations.

PO8: To develope physics natural laws resources.

PO9: Regular practice of Self-declaration of the authenticity, uniqueness of seminar/project work

PO10: Develop ability and physics skills through an appropriate of theoretical concept, practical exercises, and field work.



Yashwantrao Chavan College of Science, Karad

Department of Physics

Programme Specific Outcomes

PSO1: To understand the core knowledge of physics and the basic concepts which help them in understanding physical phenomenon in nature.

PSO2: It identifier their area of interest and further specification in the subject and develops skill and competencies to conduct scientific experiments related to physics.

PSO3: The study inculcates a rigorous understanding of the core theories & principles of physics, which includes mechanics, electromagnetism, thermodynamics & quantum mechanics

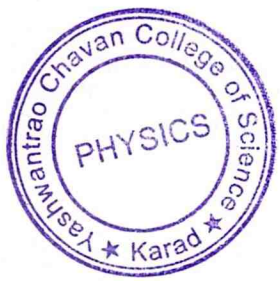
PSO4: It helps to understand the set of physical laws, describing the motion of bodies, under the influences of the system of forces.

PSO5: It provides knowledge about material properties and their applications for developing technology to solve the society's problems.

PSO6: To learn the structure of solid materials &their different physical properties along with metallurgy, cryogenics, electronics and material science.

PSO7: To understand the fundamental theory of nature & levels of atom and sub-atomic particles.

PSO8: It provides advanced knowledge and skill for technical work in industries along with their knowledge and skill in carrying out independent work.

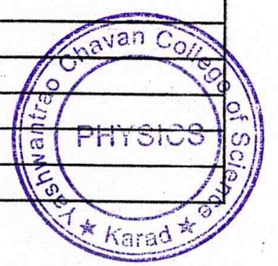


Yashwantrao Chavan College of Science, Karad
Department of Physics

PO's for B.Sc. Physics are as follows

PO1	To develop the ability to identify, formulate, analyze and solve problems in in theoretical and experimental domains of physics at both curricular and research level through critical thinking.
PO2	To enable students to apply ICT based skills and making them scientific software literate to use in academics.
PO3	To encourage research culture, provide research ambience and develop related technical proficiency
PO4	To develop attitude to pursue further research and finding placement avenues through it.
PO5	To inculcate academic and social ethical values among the students
PO6	Student are able to apply the knowledge of core concepts of physics in semester exams, in the NET, SET and GATE, national level exams
PO7	In day today access to study material, through presentations, students are capable enough to make use of Power Point presentations,
PO8	To develope physics natural laws resources.
PO9	Regular practice of Self-declaration of the authenticity, uniqueness of seminar/project work
PO10	Develop ability and physics skills through an appropriate of theoretical concept, practical exercises, and field work.

Name of the programme	Sr. No. for courses	Course code	Course Name	Course Outcome
				Upon successful completion of the course, students will be able to:
B.Sc. Physics	I	DSC A1	Mechanics -I	Understand and identify scalar and vector physical quantities in mechanics
				Understand and apply vector algebraic methods to elementary exercises in mechanics
				Understand and identify degree and order of given differential equations
				Understand the conceptual evolution of conservation laws of momentum and energy for both single and system of particles
				Understand and applybasicconcepts of rotational motion
				Solve second order, homogenous ordinary differential equations in mechanics
				In general, students are capable of correlating above concepts and methods in mechanics to both theoretical and experimental domains revealing analytical as well as numerical skills
B.Sc. Physics	II	DSC A2	Mechanics-II	Students are able to understand and apply Newtons Law of Gravitation to celestial objects
				Understand geometry of planetary orbits under the action of central force
				Solve numerical problems based on Kepler`s Laws of planetary motion
				Understand simple concepts like weightlessness, Geosynchronous satellite and GPS
				Setup differential equation for simple harmonic motion and its allied cases
				Calculate time averages of KE, PE and TE



Name of the programme	Sr. No. for courses	Course code	Course Name	Course Outcome
				Calculate time averages of KE, PE and TE
				Explain the phenomenon of surface tension on the basis of molecular forces
				Revise basic concepts such as stress, strain and elastic constants of elasticity
				In general, students are capable of correlating above concepts and methods to both theoretical and experimental domains revealing analytical as well as numerical skills
B.Sc. Physics	III	DSC B1	Electricity and Magnetism-I	Understand the physical significance of gradient, divergence and curl
				Apply concepts in vector calculus such as gradient, divergence and curl related to vector and scalar fields using Gauss, Stokes and green`s theorem
				Understand and apply concept of capacitor to isolated conductor, parallel plates, cylindrical and spherical capacitors and allied modifications in it
				Students are capable of applying above concepts to solve numerical exercise in electrostatics
				Understand and apply concepts of electrostatic field, potential to point charges, electric dipole and geometrically regular charged bodies
				Understand and apply concept of energy density in electric field
B.Sc. Physics	IV	DSC B2	Electricity and Magnetism-II	Understand importance of complexnumbers in analysis of AC Circuits contacting Inductance(L) Capacitor(C) and Resistance (R) and their various configuration
				Define and apply the concepts in AC circuits such as Impedance (Z), reactance (XC and XL), Admittance, Susceptance and Quality Factor (Q)
				Students reveal mastery in basic terminology in network analysis for further studies
				In general, students are capable of applying above concepts in network analysis to both theoretical and experimental domains
				Understand basic working principle of Ballistic galvanometer
B.Sc. Physics	V	DSC C1	Thermal Physics & Statistical Mechanics-I	
				Acquire Knowledge of Maxwell's distribution of gas molecules.
				Visualize Merits and drawbacks of thermometers.

Name of the programme	Sr. No. for courses	Course code	Course Name	Course Outcome
				Apply knowledge of thermodynamic processes in design of heat engine.
				Highlight different types of velocities of gas molecules.
B.Sc. Physics	VI	DSC C2	Wave & Optics-I	
				To develop the mathematical model for coupled oscillations.
				Understand the ultrasonic waves and their applications.
				Use of Basic principles of sound in context of acoustics of buildings
				Apply superposition principle to develop mathematical model of harmonic oscillators
B.Sc. Physics	VII	DSC D1	Thermal Physics & Statistical Mechanics-II	Develop Conceptual clarity of thermodynamic functions and Clausius-Clapeyron equation.
				Appreciate the problem associated with the black body radiation spectrum.
				Know, how the problems can be solved by using Planck's law of radiation
				Acquire preliminary knowledge of classical and quantum statistical mechanics.
B.Sc. Physics	VIII	DSC D2	Wave & Optics-II	Draw ray diagrams to demonstrate Cardinal points
				Determine the resolving power of prism and grating by making use of Rayleigh criterion.
				Qualitatively study phenomenon of polarization of light.
				Apply phenomenon of interference of light for determination of its wavelength.
B.Sc. Physics	IX	DSE E1	Mathematical Physics	Understand the some integrals and are able to solve special type of integrals that are relevant in physics.
				Understand the different ways of solving first and second order differential equations.
				Understand and solve the problems based on special functions like Hermite, Bessel, Laguerre and Legendre functions.
				Understand fundamentals and applications of Fourier series, Fourier and Laplace transforms, their inverse transforms etc.
				Performing complex analysis.

Name of the programme	Sr. No. for courses	Course code	Course Name	Course Outcome
B.Sc. Physics	X	DSE E2	Quantum Mechanics	Understand different types of operators used in quantum mechanics and are able to use them to solve different problems.
				Understand and solve problems related to different types of potential like, Square-well, Bloch wave, Kroning-Penney square periodic potential.
				Understand and solve hydrogen atom problem
				Understand the angular momentum operators & their Eigen values
B.Sc. Physics	XI	DSE E3	Classical Mechanics & Classical Electrodynamics	Students are able to understand and solve central force problems and understands the conservation of energy, linear momentum and angular Momentum in system
				Students are able to understand how to impose constraints on a system in order to simplify the methods used in solving physics problems.
				Students are able to understand the concept of special theory of relativity.
				Students are able to understand the concept of lagrangian and Hamiltonian transformations and are able to solve problems on lagrangian and Hamiltonian transformations.
B.Sc. Physics	XII	DSE E4	Digital & Analog Circuits & Intrumentation	Students are able to understand basic logic gates
				Students are able to understand transistor amplifier and CRO
				Students are able to understand timer and Operational amplifier
B.Sc. Physics	XIII	DSE F1	Nuclear & Particle Physics	Students are able to understand the nuclear properties
				Students are able to analyze the single particle nuclear shell model and related phenomena
				Students are able to understand and apply selection rule of elementary particles and fission, fusion reactions
				Students are able to understand and apply the particle accelarators and nuclear detector to solve numerical problems.

Name of the programme	Sr. No. for courses	Course code	Course Name	Course Outcome
B.Sc. Physics	XIV	DSE F2	Solid State Physics	Understand different crystal structures, interaction with X-ray and also understands various properties about crystals
				Understand different types of crystal defects.
				Understand different properties of semiconducting and superconducting properties
				Understand theoretical background of dielectric and magnetic properties of material
B.Sc. Physics	XV	DSE F3	Atomic & Molecular Physics & Astrophysics	Understand and apply ll-coupling, ss-coupling, LS coupling in atomic spectra and able to calculate and their selection rules.
				Understand Zeeman effect and Paschen-Back of two electrons, Stark effect of hydrogen and Compton effect.
				Understand and apply Frank Condon principle, Born-Oppenheimer approximation and I R specroscopy
				Understand the concepts related to various types of astronomy along with various instruments to apply it for practical purposes. .
				Students are able to understand structre of universe, raman spectra and of stars and stellar evoluation
B.Sc. Physics	XVI	DSE F4	Energy Studies & Materials Science	Understand Study of Solar Wind and Interaction with Magnetized Planets
				Understand Magnetosphere in the solar system and Effects of Solar activities on Technological Earth Systems
				To understand bio energy and bio mass conersion
				To understand superconductivity and types of superconductivity
				To understand nanotechnology

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