



Shikshak sanchalit shikshan sansthas

Dr.S.D.D.Arts College and Commerce & Science College Wada Dist:Palghar

Department of Physics

Dr. Kailas Prabhakar Joshi

1. Program & Program Specific Outcome (Year 2021-2022)

Program Name Code	Outcome
Program Specific Name Code – B.Sc PHYSICS	On completion of the B. Sc. (Physics) program, 1. Students will be able to understand theories & principles of physics, which include mathematical methods, electromagnetism, Atomic and molecular spectra, Electrodynamics, electronics, thermodynamics, & Nuclear physics, quantum mechanics solid state. 2. Learn the Concept of Quantum Mechanics, Relativity, introduced at degree level in order to understand nature at atomic levels. Provide knowledge about material properties and its application for developing technology to ease the problems related to society.. 3. Understand physical properties chemical bonds in crystallography its structures and dynamics. 5. Analyze the application of mathematics to problem in physics & development of mathematical method suitable for such application & for formulation of physical theories. 6. Learn the structure of solid materials & their different physical properties along with mechanics, Dynamics, electronics, optics & material science. On completion of the B. Sc. Practical's program, students will be able to 1. Understand Basic Circuits using Active Devices, Analog Circuits and their applications using Active Devices. 2. Learn basic test instruments such as power supply, function generator, CRO and their construction and working principle. understand Basic differential amplifier and their applications in linear Integrated circuits 3. Design & conduct experiments as well as to analyze data and its interpretation. 4. Design a system component on bread board or process to meet desired needs within realistic constraints such as economic environmental, social, political, ethical, health & safety. 5. Understand the fundamental concept of semiconductor like crystal structure, energy band gap, charge carrier statistics.



Dr. Kailas Prabhakar Joshi

Assistant Professor -Department of Physics

2. Course Outcome (Year 2021--22)

Course Name & Code	Outcome
Physics Paper I Classical Physics USPH-101	After successful completion of the course, the student is expected to 1. Learn the basics of properties of matter, stress, strain, how Young's modulus and rigidity modulus are defines, how they are evaluated for different shapes of bodies that can solved using their practical's of determination. 2. Learn the fundamentals of fluid dynamics using their different equations like Bernoulli's and Poiseuilles and studied types of flows. 3. Study the lens maker formula, focal lengths, types of Aberration's, types of Eye pieces. Lens combination and its practical correlations with the content .. 4. study the interference, thin films, fringes in wedge shaped films and grasped with numerical. 5.Study-the-behaviour-of –gases, Thermodynamics their laws, Heat capacity indicator diagrams, and grasp the significance of terms like path function and work done during thermal processes.
Practical USPH-P-01	On successful completion of this practical course students will be able to: 1.To demonstrate their practical skills. 2.To understand and practice the skills while doing physics practical. 3.To understand the use of apparatus and their use without fear. 4.To correlate their physics theory concepts through practical. 5. Understand the concepts of errors and their estimation
Physics paper I- Mechanics-and, Thermodynamics USPH-201	1: Learn the basics of mechanics specially types of pendulums i.e. compound pendulum ,katers pendulum its periods .Practical's on these topics enjoyed by students. 2: Learn the fundamentals of center of mass, types of momentums, applications of momentum principle. 3.Learn simple harmonic oscillator, relation between SHM and UCM , including damped and forced oscillators and grasp the significance of terms like quality factor and damping-coefficient-,energy-of---oscilaters,phase angles etc. 3.Study the Ideal heat Engine ,steam Engine,combustion-engine,otto-engine,diesel engine ,carnots cycle ,ranking cycle

	and its Effects ,laws of themodynamics and different types of numericals. 4.students are able to understand Entropy using exxchange of Heat ,path functions and conversion of change in energy. 5.study low temperature physics, different methods of liquefaction of helium ,gases.stydy of freezings.many types of numerical solved by students.
Practical\ USPH-P-02	On successful completion of this course students will be able to: 1. To demonstrate their practical skills. 2 To understand and practice the skills while doing physics practical. 3 To understand the use of apparatus and their use without fear. 4 To correlate their physics theory concepts through practical. 5. Understand the concepts of errors and their estimation
Physics-paper -I Mechanics and thermodynamics USPH-301	On successful completion of this course, students will be able to: 1. Understand the concepts of mechanics & properties of matter & to apply them to problems. 2. Comprehend the basic concepts of thermodynamics & its applications in physical situation. 3. Learn about situations in low temperature. 4. Demonstrate tentative problem solving skills in all above areas.
Physics paper III Applied Physics-I USPH-303	On completion of this, it is expected that 1. Students will be exposed to contextual real life situations. 2. Students will appreciate the role of Physics in 'interdisciplinary areas related to materials, Bio Physics, Acoustics etc. 3. The learner will understand the scope of the subject in Industry & Research. 4. Experimental learning opportunities will faster creative thinking & a spirit of inquiry
Practical-Course-3 USPH-P-03P	On successful completion of this course students will be able to 1. Understand &practice the skills while performing experiments. 2. Understand the use of apparatus and their use without fear& hesitation. 3. Correlate the physics theory concepts to practical application. 4. Understand the concept of errors and their estimation.
Physics paper I-Optics and Digital electronics USPH-401	1. After the background knowledge devoted for light, students are able to understand interference, diffraction, polarization. 2. The elements in model teaching with prism, polaroid's, gratings, lenses given good response from students. 3. Types of Diffraction, Fresnel and Fraunhofer diffractions were studied.

	- Learn types of crystals like calcite, positive, negative, quarter wave plates, retarders. Polarizer's, Analyzers and Grating theory. - Law of Malus, Brewers law, Applications of polarized light. - A Unit of Digital Electronics created quiet interest to the students. students are able to solve conversion in binary to decimal, hexadecimal, compliments, adders . - Types of Flip Flops ,registers, counters are studied.
Applied Physics III Geophysics, Microprocessor and Radiation Physics USPH-403	- Understand the concept of Mechanics and properties of Matter and to apply them to problems - students are able to understand Geology and Geophysics and Environmental sciences, with solar system, geophysical evidences, planetary evaluation etc. - Students are able to understand functions of Intel 8085 instruction set, Assembly language, and flow chart - Radiation physics. Types of Communication, concept of ASK.PSK, are understood.
Practical-practical-course-4 ABC D USPH-P-04	On successful completion of this course students will be able to - Understand & practice the skills while performing experiments. - Understand the use of apparatus and their use without fear & hesitation. - Correlate their physics theory concepts to practical application.
Physics Paper II Solid-state-physics USPH-502	- Be able to account for inter atomic forces and bonds, have a basic knowledge of crystal systems and symmetries, crystalline materials are studied using diffraction, including concepts like structure factor, and scattering amplitude hkl value determination. - Be able to perform structure determination of simple structures, understand the concept of reciprocal space and be able to use it as a tool know the significance of Brillouin zones - Be able to calculate thermal and electrical properties in the free-electron model and know Bloch's theorem and energy band and distinction between metals, semiconductors and insulators - Be able to estimate the charge carrier mobility and density. Be able to account for what the Fermi surface is and how it can be measured. - To understand Lattice heat capacity and to compare Classical theory, Einstein's theory, Debye's theory of specific heat of solids. Students are able to understand crystal its systems, types - Semiconductors its types conduction and characteristics were understood by students. Semiconductors its various characteristics were verified practically. - Band theory periodic potential. Fermi energy,

	superconductivity understand by students 8. Number of numerical are solved like susceptibility, characteristics, Design of circuits etc.
Physics paper IV\ Electrodynamics USPH-504	1. Have gained elaborated knowledge about electrostatics gauss laws divergence and curl; poissons, Laplace equations, image problems, different charge densities. 2: Have gained ability to apply poissons Amperes and faradays laws in magnestostatics to find different potentials and electrostatics and magnestostatics fields 3: Study in depth about Polarization, bound charges and boundary condition, energies infields. 4. Using Maxwell equations students are able to understand interrelations and equivalence of E, D, B, H. 5. To realize the importance of application of Blot Savarts Law and Amperes law. After Maxwell equations and formed continuity equations 6: To understand the relevance of different magnetization and the boundary condition of magnetic field with electromagnetic waves in vacuum and matter using different form of wave and light equations. 7. Number of numerical were solved after completion of every unit, these efforts give rise up confidence level.

Practical Physics Paper I USPH-P05	Knowledge Outcomes: Students able to understand fundamental knowledge of physics, including basic concepts and principles in thermodynamics & mathematical (analytic and numerical) methods, Solid state Physics, Atomic and Molecular Physics, electrodynamics, Classical Mechanics, Electronics, Nuclear Physics, Relativity and experimental methods for physics. Professional Skills Students will have acquired the following professional skills to deal with representative physics problems and situations at the undergraduate level: 1. Identifying the key factors and applying appropriate principles and assumptions in the formulation of physics problems; 2. Applying appropriate analytical and approximation methods; 3. Applying general experimental and measurement skills with prescribed procedures; 4. Analyzing experimental data and their level of uncertainty, and relating the experimental results with theoretical expectations; 5. Applying appropriate scientific programming skills; 6. Reporting the solutions to physics problems, experimental or project studies either orally or in written format Generic Competencies: Graduates should have acquired some generic skills in their study, including the following 1. identifying the key issues and attempting different methods in dealing with general problems; 2. manipulating precise and intricate concepts to construct logical arguments; 3. paying attention to the details and their logical relationships when analyzing an issue; 4. evaluating an issue critically based on evidence and scientific principles; 5. being comfortable with numbers and analyzing an issue quantitatively; 6. acquiring knowledge effectively by self-study and work independently; 7. working effectively in a team; 8. presenting information in a clear, concise and logical manner; and 9. having good time management skills.
Physics paper I -Classical-Mechanics	1. students are able to understand central force, Kepler's law, co-ordinate system and laws of motion with types

USPH-601	of pendulum. - students are able to solve Lagrange's equations, Alembert's principle, constraints and numerical, kinematics of moving fluids and eulers equation, tensor. - students are able to understand Duffings equations, Chaos and types of Harmonic Oscillator - overall understanding of concepts of equations of motion ,linear harmonic and nonlinear harmonic oscillator and their motions, chaos, dynamics kinematics of fluid intrigued fascinating interest to the students.
Physics Paper II Electronics USPH-602	- Understand the basics of semiconductor devices and their applications. About SCR, JFET, MOSFET, UJT, OPAMP. - Understand-Operational-Amplifier-as an-instrumentation, comparator, filters of amplifier. Wave form generation. 3.understand the basic concept of timing pulse generation and regulated power supplies - Understand the basic of digital circuits, number of numerical are solved. good ideas and skill to solve numerical to design circuits.
Practical Physics Paper I USPH-P06	Knowledge Outcomes: Students able to understand fundamental knowledge of physics, including basic concepts and principles in thermodynamics & mathematical (analytic and numerical) methods, Solid state Physics, Atomic and Molecular Physics, electrodynamics, Classical Mechanics, Electronics, Nuclear Physics, Relativity and experimental methods for physics. Professional Skills Students will have acquired the following professional skills to deal with representative physics problems and situations at the undergraduate level: - Identifying the key factors and applying appropriate principles and assumptions in the formulation of physics problems; - Applying appropriate analytical and approximation methods; - Applying general experimental and measurement skills with prescribed procedures; - Analyzing experimental data and their level of uncertainty, and relating the experimental results with theoretical expectations; - Applying appropriate scientific programming skills; - Reporting the solutions to physics problems, experimental or project studies either orally or in written format

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