OFFICE OF THE PRINCIPAL, S.K.C.G. (AUTONOMOUS) COLLEGE, PARALAKHEMUNDI, GAJAPATI, ODISHA-761200

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PROGRAMME OUTCOME

DEPARTMENT OF PHYSICS

Objectives	Programme Outcome
To enable students gain requisite knowledge and acquire ability to apply them as and when required	On graduation, the student will have the following abilities: a) A fundamental as well as a higher level of understanding, comprehension, analysis and articulation of concepts studied. b) Will have the ability to identify problems/issues and come up with creative solutions.

SEMESTER - I

Course Outcome		Papers	Learning Outcome&Attainment Level
CO 1	To learn about the functions and their properties like limit, continuity, differentiation, integration, plotting, approximations, Partial derivatives, exact and inexact differentials and apply them to solve physics problems.	Core Course Paper I & II GE 1	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	To learns and solve first and second order differential equations & nature of solution for different problems.		
CO 3	To develop a strong foundational knowledge on Vectors and their basic properties, gradient, divergence, curl, line, surface, volume integrals of scalar & vectors and their applications. To solve these problems in curvilinear, rectangular, spherical polar and cylindrical coordinate system.		
CO 4	To understand the mechanics of object and its properties for rotational dynamics, non-inertial systems, Elastic properties of mater, fluid motion and viscosity and to solve the problems.		
CO 5	To describe gravitation, central force motions, oscillations and special theory of relativity and to solve the problems.		
CO 6	To understand the mechanics of object and its properties for rotational dynamics, non-inertial systems, Elastic properties of mater, fluid motion and viscosity, Gravitation, central force motions, oscillations and special theory of relativity and to solve the problems.		

SEMESTER - II

Course Outcome		Papers	Learning Outcome & Attainment Level
CO 1	To learn about Electric field, Magnetic field and their relation with potential of different regular objects, different laws associated with it and their application for solving practical problems.	Core Course Paper III & IV GE - II	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	To understand about dielectric and magnetic properties of matter, Electromagnetic inductions, Maxwell's equation, electrical AC circuits & application, Network theorems & their application to AC & DC circuits.		
CO 3	To learn about the geometrical nature of light and its properties like reflection, refraction, dispersion, matrix formulation of light and their application to thick lens, thin lens, eyepieces etc.		
CO 4	To describe EM wave nature of light and its properties like interference, diffraction and apply them to study about different optical devices like single slit, double slit, bi-prism, gratings, zone plates, thin films, interferometer, telescopes, straight edges etc.		
CO 5	To be able to Summarize all the electric, magnetic, dielectric concepts of matter and properties of light illustrated through the topics covered.		
CO 6	To acquire representation abilities on the above topics in terms of writing and demonstration.		

SEMESTER - III

Course Outcome		Papers	Learning Outcome & Attainment Level
CO 1	To familiarize students with functions, special functions, series as well as methods to solve differential equations and their advanced mathematical operations	Core Course Paper V,VI &VII GE -3A	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	To inculcate the thinking ability in students for the real-time usefulness of mathematics in Physics.		
CO 3	To acquire knowledge of the thermodynamic phenomena and related theoretical approach to understand the static and dynamic behavior of ideal and real gases		
CO 4	To introduce students the basics of principle		

	and operations of semiconductor devices and their real-time applications.		
CO 5	To enable students to use their theoretical understanding by observing and obtaining different parameters through experiments and learning Sci-Lab programming to solve differential equations.		

SEMESTER IV

Course Outcome		**Papers**	**Learning Outcome & Attainment Level**
CO 1	To study and understand the integral transforms their properties and applications with a brief revision of complex numbers and their operations.	Core Course Paper VIII, IX & X GE -III	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	To introduce the students with the evolution of atomic model and relevant experimental evidences that helped these developments.		
CO 3	To motivate students for the courses of quantum mechanics by giving them the initial required introduction of duality of particles.		
CO 4	To help the student understand the basic terminologies related to nucleus and their properties as well as to give an idea of radioactivity and the operations of nuclear reactors.		
CO 5	To enable students to use their theoretical understanding by observing and obtaining different parameters through experiments and learning SciLab programming to solve differential equations.		
CO 6	Come up with comprehensive notes that students can articulate, express, write in any verbal or written assessment processes on all topics mentioned above.		

SEMESTER V

Course Outcome		**Papers**	**Learning Outcome & Attainment Level**
CO 1	To formulate Schrodinger equation, explain probabilistic interpretation of wave function, identify acceptable wave function, construct wave packet using the concept of superposition principle.		
CO 2	To describe operators, Eigen values, Eigen functions. To apply Schrodinger Equation to		

	one dimensional problems. To explain the behavior of atoms in electric and magnetic field.	Core Course Paper XI & XII DSE-I &II	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 3	To describe crystal structure and the dynamics involved in crystal lattice. To classify materials on the basis of their magnetic properties.		
CO 4	To conceptualize the dielectric properties of materials and explain the theories. To acquire basic knowledge on laser and its types. To explain conductivity of materials on the basis of Kronig-Penny model. To be able to describe superconductivity.		
CO 5	To apply the knowledge of Lagrangian in numerous physical problems. To solve different problems using the calculus of variation technique.		
CO 6	To build the concept of special theory of relativity and four vectors and to apply these concepts in physical problems.		
CO 7	To describe properties of nuclei, radioactive decay and the governing laws. To acquire basic knowledge of particle physics. To explain nuclear detectors, particle accelerators and different nuclear models.		

SEMESTER VI

Course Outcome		**Papers**	**Learning Outcome & Attainment Level**
CO 1	To build concept of micro and macro state, ensemble, distribution law, partition function and to establish correlation between thermodynamics and statistical mechanics.	Core Course Paper XIII & XIV DSE-III &DSE IV	SGPA on the basis of Credits earned from MSE (Mid Semester Examinations) or CIA (Continuous Internal Assessments) & ESE (End Semester Examinations) The final CGPA attained at the Final Semester is calculated taking all SGPAs of all semester and grading is done to award $1^{st}/2^{nd}$ Class Honors with Distinction.
CO 2	To understand quantum statistics and to explain the various laws on thermal radiation.		
CO 3	To explain the concept of electromagnetic field. To derive wave equation in unbounded media and bounded media.		
CO 4	To gain basic knowledge on polarization. To demonstrate various types of polarizations. To explain rotatory polarization and phase retardation plates.		
CO 5	To acquire basic knowledge of nanomaterials and their band structure, length scale. To apply quantum mechanics in nanoscale systems.		
CO 6	To describe different methods of synthesis of nanomaterial, their characterization and hence application. To develop research aptitude.		