ST JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS)

VISAKHAPATNAM

DEPARTMENT OF PHYSICS

The Department of Physics, St. Joseph's College for Women (A) seeks to serve BSc Programme students interested in careers related to Physics. The department offers Physics in two core combinations MPC and MPCs of BSc. programme. In order to cater to the diverse interests of students and employers, a total of 10 theory and 06 practical courses are offered as part of Physics domain in the two combinations.

Programme Specific Outcomes of BSc Programme with Physics

PSOs : Students after graduating with Physics as one of the core subjects will:

PSO 1: Be able to demonstrate basic knowledge in the core areas of Physics (Classical Mechanics, Waves and Acoustics, Optics and Lasers, Thermal Physic, Electricity, Magnetism and Electronics, Modern Physics, and Renewable Energy).

PSO 2: Be versatile in laboratory techniques in using apparatus

Assessment Methodology

PSO 1: Be able to demonstrate basic knowledge in the core areas of Physics (Classical Mechanics, Waves and Acoustics, Optics and Lasers, Thermal Physic, Electricity, Magnetism and Electronics, Modern Physics, and Renewable Energy).

Direct method of computing PSO 1 attainment is based on the student performance in all assessment instruments namely online and offline - subjective and objective tests for all the courses These exams test students' learning at knowledge, understanding and application levels in the respective courses. Indirect method of computing PSOs is done through students' course exit survey wherein a structured questionnaire is administered to the students and their response is solicited on a 5 point scale. Responses are consolidated and students' satisfaction level with reference to course transaction is computed. Level of attainment of course outcomes includes both direct and indirect assessments. Direct assessment is done by testing the knowledge and/or skills of the student in that course by conducting standardised examinations. In indirect assessment we use the student feedback on course which is measured on 5 point scale. The sum of these two assessments is shown as the level of attainment of that course.

Assessment of all the theory courses is done in two parts, namely by formative assessment (40%**)** which is internal and summative assessment (60%) which is external**.** The evaluation of 100% of the assessment in each semester is distributed as follows:

Mid Semester Examination 1 15% (which is offline)

Mid Semester Examination 2 15% (which is online)

Accessory Assessment 5% (written quiz/Assignment/Project on working model)

Attendance 5% (above 75% attendance will be rewarded)

End semester examination 60% (which is descriptive)

Level of attainment of PSO1 (all theory courses offered by the department): 61.86%

PSO 2: Be versatile in laboratory techniques in using apparatus

PSO 2 attainment level is ascertained based on continuous assessment (throughout) and summative assessment (at the end of) in every semester. This direct assessment involves testing students' knowledge on standardised procedures, their skill in executing them and their compliance with regulations in handling and percentage of error in the conduct of all the laboratory courses

Assessment of all the practical courses: Assessment is done in two parts, namely by continuous assessment (40%**)** and summative assessment (60%). In Continuous assessment each practical course will be assessed for 40% by considering the 50% (best scored) of the experiments and the total will be calculated for 40%. Summative assessment (60%) of practical courses is through end semester practical exams designed to test student's knowledge as well as skills in the conduct of experiments and generation of reliable results. A written record of experimental work carried out throughout the semester is also assessed.

Level of attainment PSO2 (all practical courses offered by the department): 70.126%

Course outcomes of all the courses offered by Physics department

Code	**Title of the paper**	**Outcomes**
PH 1403 (Th.)	Classical Mechanics	**CO1:** Apply mathematical methods in the analysis physical

		aspects **CO2**:Know the importance of minimizing methods in the measurements of errors, so as to maintain accuracy in practical observations **CO3**:Understand the effect of gravitation on rigid bodies
Level of attainment of CO1 to CO3: ------ 66.4%		
PH 1451 (Pr.)	Practical I A	**CO1**:To apply mathematical methods in the analysis of physical aspects **CO2**:To minimize methods in measurements of errors to maintain accuracy in practical observation **CO3**: understanding effect of gravitation on rigid bodies and to learn relativistic variation of time and length under different frames of reference
Level of attainment of CO1 to CO3: ------60.98%		
PH 2403 Th.	Waves and Acoustics	**CO1:** To compare and analyze the wave motion in different fluids **CO2**:To make the student learn about acoustics of buildings and auditoria **CO3**:To learn about audio and video system
Level of attainment of CO1 to CO3: 65.8%		
PH 2452 Pr.	Practical I B	**CO1:** To apply mathematical methods in the analysis of physical aspects **CO2**:To minimize methods in measurements of errors to maintain accuracy in practical observation **CO3**: understanding effect of gravitation on rigid bodies and to learn relativistic variation of time and length under different frames of reference
Level of attainment of CO1 to CO3:-----67.7%		

PH 3403 Th.	Optics and Lasers	**CO1**:Understand of various phenomena occurring in nature by Applying the basic laws in physics **CO2:**Become aware of the basics in latest transmission techniques involved communications **CO3**:Apply the concepts while appearing for competitive exams leading to post graduation and others
Level of attainment of CO1 to CO3: 69.7%		
PH 3451 Pr.	Practical II A	**CO1**: Understanding different concepts of Heat **CO2**:Awareness of important concepts of Optics **CO3**:Measuring experimentally the physical constants like ω,λ,θ,K,s and to verify standard values
Level of attainment of CO1 to CO3: ----67.56%		
PH 4403 Th.	Thermal Physics	**CO1:** Understand various physical processes involved in nature **CO2**:Analyze a physical phenomena based on physical laws **CO3**:Apply the concepts and principles to face competitive examinations leading to higher studies and others
Level of attainment of CO1 to CO3: ---71.5%		
PH 4451 Pr.	Practical II B	**CO1**: Understanding different concepts of Heat **CO2**:Awareness of important concepts of Optics **CO3**:Measuring experimentally the physical constants like ω,λ,θ,K,s and to verify standard values
Level of attainment of CO1 to CO3:-----77.4%		
PH 5401 Th.	Electricity , Magnetism and Electronics	**CO1:** Understand the basic concepts in physics in relation to the effect of charges at rest and motion under combination of electronic and magnetic fields. **CO2**: Understand the working principles of electric devices and analyze electric circuits **CO3**:To develop the skills of students in connecting different

		types of electric circuits and the measurements of various parameters
Level of attainment of CO1 to CO3:------72.9%		
PH 5402 Th.	Modern Physics	**CO1:** Gain insight into the nucleus of the atom and various concepts, principles and measurements regarding radioactive radiations. **CO2**:Acquire wider knowledge of nuclear structure, nuclear detectors and accelerators and gives a practical outlook regarding nuclear reactors, nuclear power plants and accelerators. **CO3**:Gain insight into classical and quantum aspects in the behavior of particles and dualistic nature of matter and light.
Level of attainment of CO1 to CO3:------72.7%		
PH 5452 Pr.	Practical III A	**CO1:** Developing skills of connecting different types of electrical circuits **CO2**: Measuring values of potential difference and currents in various types of circuits. **CO3**: Understanding basic principles and working of electronic devices.
Level of attainment of CO1 to CO3:------68.32%		
PH E16401 Th.	Renewable Energy	**CO1:** To harness the environment friendly RE sources and to enhance their contribution to the socio-economic development. **CO2**:To create public awareness and involve users/local community along with capacity building in establishing, operating and managing RE projects. **CO3**:To initiate necessary measures in energy conservation as per the guidelines of Bureau of Energy Efficiency (BEE), Government of India..
Level of attainment of CO1 to CO03:----83.5%		
PH E1	Practical III B	**CO1:**Students will know the conversion methods of electrical

6451 Pr		energy/mechanical energy/light energy/chemical energy/etc CO2: They will study the power characteristics CO3: They estimate the efficiency of solar cooker
Level of attainment of CO1 to CO3:--------78.8%		
PH Th.	Solar Thermal and Photovoltaic aspects	**CO1:** To describe the use of solar energy and the various components used in energy production with respect to applications like – heating, cooling, desalination, power generation, drying, cooking etc. **CO2:** To understand the importance of renewable energy resources and its utilization for the Thermal and Electrical energy needs. **CO3:** To learn the basics of solar radiation , solar PV systems and their applications.
Level of attainment of CO1 to CO3:------		
PH Th.	Wind Hydro and Ocean energies	**CO1:** To appreciate the need of wind energy and the various components used in energy generation and to know the classifications **CO2:** To compare wind , solar, Hydro and Ocean energies, their prospects, advantages and limitations. **CO3:** To acquire the knowledge of wave power , tidal power and geothermal principals and applications.
Level of attainment of CO1 to CO3:------		
PH	Energy storage devices	**CO1:**Aquire the knowledge of fuel cells, magnetic and electric energy storage systems, principles and applications. **CO2:** To analyze the environmental aspects of renewable energy resources **CO3:** To learn about thermo-chemical, Photo-chemical. Bio-Chemical, Electro-Chemical, Fossil fuels and synthetic fuels
Level of attainment of CO1 to CO3:------		