Government Degree College

Pendlimarri - 516216

YSR Kadapa District, Andhra Pradesh

**Department of Physics**

**Programme Outcomes**

**Programme Specific Outcomes for B.Sc.**

**PSO1**: To explore Evolution and functionality of Digital computers. Apply logical skills to

analyze a given problem.

**PSO2**: Fundamental concept of data structures and to emphasize the importance of data

structures in developing and implementing efficient algorithms.

**PSO3**: Design & develop database for large volumes & varieties of data with optimized data

processing techniques.

**PSO4**: Develop problem-solving and programming skills using OOP concepts. Develop the

ability to solve real-world problems through software development in high-level

programming language like Java.

**PSO5**: Know Computer system resources and the role of operating system in resource

management with algorithms. Understand Operating System Architectural design and its

services.

**PSO6**: Student can join Botany related or life Science related private firms.

**PSO7**: Can join agriculture seed companies, tissue culture labs, pharma companies, etc.

**PSO8:** Can work as an environmental consultant in various agencies.

**PSO9**: Develop inclination towards Environmental consultants.

**PSO10:** Student can start their venture in Nursery for development of various plant variety

plantlets like citrus, mango, pomegranate, etc.

**PSO11**: B.Sc. Chemistry provides backbone in all the traditional branches of Physical,

Inorganic, organic and Analytical chemistry.

**PSO12:** The experimental work will be continues throughout the session to develop the

theoretical knowledge and practical as well.

**PSO13:** Graduates from this course will be better prepared to understand the new environment

friendly systems and can understand the processes that the chemical industry is

adopting.

**PSO14:** The course has been designed to have insight in almost all the aspects of chemistry

and to build a solid foundation in the subject to choose a career in industry or

academics or research.

**PSO15:** The syllabus very well designed and it covers the areas like water chemistry,

consumer products-soaps, detergents, shampoos, skin preparations, polymer

chemistry, drugs, industrially important chemicals used in Industry.

**PSO16:** In banking sector students can get in to with mathematics.

**PSO17:** They can prepare for MPSC and UPSC exam.

**PSO18:** Mathematics graduate can work as finance and investment analyst and advisor and

chartered or certified accountant.

**PSO19:** A career in teaching offers unparalleled job satisfaction.

**PSO20:** Physics graduate can find ample career openings both in public as well as private

sector enterprises; also can apply for all government jobs as graduation is the basic

qualification.

**PSO21:** One can find various opportunities in governmental organizations like DRDO, VSSC,

ISRO, SSPL, BARC, etc.

**PSO22:** They are also recruited in space research centers and in research laboratories.

**PSO23:** There are some of the common job types like, Lab Supervisor, Technician, Teachers,

Manager, and Radiation Oncologist.

**PSO24:** Students become well versed regarding basic concepts of modern biology, field

survey work and social extension program and their applications in real life.

**PSO25**: Students acquire knowledge of zoology; it broadens their outlook towards importance

of field survey work in identifying and classifying and distribution of animals.

**PSO26:** It provides students a launch-pad to enroll themselves for post graduate study in

systematic and taxonomy.

**PSO27:** Practical work make the students skillful, this skill will help them to design outdoor

activities involving local citizens in conserving biodiversity in their daily life.

**PSO28:** Various activities like field survey and photography project develop their hidden

talent, make their mind face to think and act. Science exhibition, poster competition,

short trip help in shaping their personality and do innovations which will be beneficial

for the country.

**PSO29:** Competency in reading, writing, listening and writing at professional level.

**PSO30:** Ability to prepare CV, advertisement writing, brief re Program Outcomes writing.

**PSO31:** Understand the structure and function of grammatical units.

**PSO32:** Know the use of language at semantic and syntactic levels.

**PSO33:** Developed skill in electronic communication as well.

**Government Degree College**

**Pendlimarri - 516216, YSR Kadapa District, Andhra Pradesh**

**COURSE OUTCOMES**

**Department of Physics**

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC MPC | I | PHY01 | Mechanics, Waves  and Oscillations |

**On successful completion of this course, the students will be able to:**

**CO 1:** Understand Newton’s laws of motion and motion of variable mass system and its

application to rocket motion and the concepts of impact parameter, scattering cross section.

**CO 2:** Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the precessional motion of a freely rotating symmetric top.

**CO 3:** Comprehend the general characteristics of central forces and the application of Kepler’s laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation.

**CO 4:** Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.

**CO 5:** Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.

**CO 6:** Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.

**CO 7:** Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC  MPC | II | PHY02 | Wave Optics |

**On successful completion of this course, the students will be able to:**

**CO 1:** Understand the phenomenon of interference of light and its formation in (i) Lloyd’s single mirror due to division of wave front and (ii) Thin films, Newton’s rings and Michelson interferometer due to division of amplitude.

**CO 2:** Distinguish between Fresnel’s diffraction and Fraunhoffer diffraction and observe the diffraction patterns in the case of single slit and the diffraction grating.

**CO 3:** Describe the construction and working of zone plate and make the comparison of zone plate with convex lens.

**CO 4:** Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity..

**CO 5:** Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.

**CO 6:** Explain about the different aberrations in lenses and discuss the methods of minimizing them.

**CO 7:** Understand the basic principles of fibre optic communication and explore the field of Holography and Nonlinear optics and their applications.

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC  MPC | III | PHY03 | Heat and  Thermodynamics |

**On successful completion of this course, the students will be able to:**

**CO 1:** Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions and the transport phenomenon in ideal gases

**CO 2:** Gain knowledge on the basic concepts of thermodynamics, the first and the second law of thermodynamics, the basic principles of refrigeration, the concept of entropy,the thermodynamic potentials and their physical interpretations.

**CO 3:** Understand the working of Carnot’s ideal heat engine, Carnot cycle and its efficiency

**CO 4:** Develop critical understanding of concept of Thermodynamic potentials, the formulation of Maxwell’s equations and its applications.

**CO 5:** Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.

**CO 6:** Examine the nature of black body radiations and the basic theories.

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC  MPC | IV | PHY04 | Electricity, Magnetism & Electronics |

**On successful completion of this course, the students will be able to:**

**CO 1:** Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant.

**CO 2:** Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances.

**CO 3:** Understand Biot and Savart’s law and Ampere’s circuital law to describe and explain the generation of magnetic fields by electrical currents.

**CO 4:** Develop an understanding on the unification of electric and magnetic fields and Maxwell’s equations governing electromagnetic waves.

**CO 5:** Phenomenon of resonance in LCR AC-circuits, sharpness of resonance, Q- factor, Power factor and the comparative study of series and parallel resonant circuits.

**CO 6:** Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors

**CO 7:** Understand the operation of basic logic gates and universal gates and their truth tables.

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC  MPC | IV | PHY05 | Modern Physics |

**On successful completion of this course, the students will be able to:**

**CO 1:** Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics.

**CO 2:** Develop critical understanding of concept of Matter waves and Uncertainty principle.

**CO 3:** Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications.

**CO 4:** Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of Nuclear models and different nuclear radiation detectors.

**CO 5:** Classify Elementary particles based on their mass, charge, spin, half life and interaction.

**CO 6:** Get familiarized with the nano materials, their unique properties and applications.

**CO 7:** Increase the awareness and appreciation of superconductors and their practical applications*.*

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC  MPC | V | PHY06C | Applications of Electricity & Electronics |

**On successful completion of this course, the students will be able to:**

**CO 1:** Identify various components present in Electricity& Electronics Laboratory.

**CO 2:** Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.).

**CO 3:** Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements.

**CO 4:** Understand the need & Functionality of various DC & AC Power sources.

**CO 5:** Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting.

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| **PROGRAM** | **SEMESTER** | **CODE** | **COURSE** |
| B.SC  MPC | V | PHY07C | Electronic Instrumentation |

**On successful completion of this course, the students will be able to:**

**CO 1:** Identify various facilities required to set up a basic Instrumentation Laboratory.

**CO 2:** Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.

**CO 3:** Demonstrate skills of using instruments like CRO, Function Generator, Multimeter etc. through hands on experience.

**CO 4:** Understand the Principle and operation of different display devices used in the display systems and different transducers

**CO 6:** Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxymeter etc. and know the handling procedures with safety and security.