V.K.V GOVERNMENT DEGREE COLLEGE, KOTHAPETA

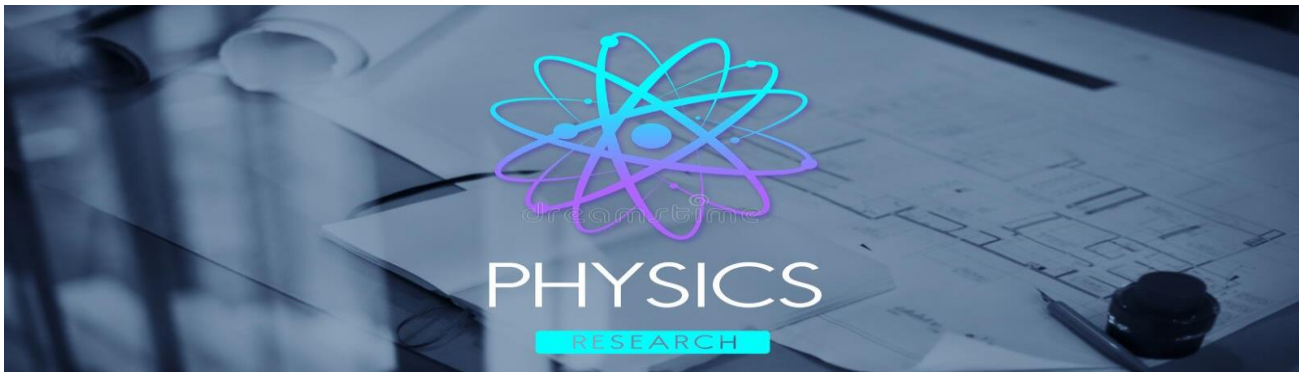
(Accredited by NAAC "B" Grade)

(An ISO 9001:2015 Certified College by HYM International Certifications Pvt. Ltd.)

DEPARTMENT OF PHYSICS

COURSE OUTCOMES OF PHYSICS

2024-2025



VKV GOVERNMENT DEGREE COLLEGE, KOTHAPETA
NAAC Accredited 'B' Grade (2.13 CGPA)
Affiliated to Adikavi Nannaya University, Rajamahendravaram
Kowshik Road, Kothapeta-533223 Dr B R Ambedkar Konaseema Dt AP
An ISO 9001-2015 Certified college by HYM International Certifications Pvt Ltd

DEPARTMENT OF PHYSICS
COURSE OUTCOMES OF PHYSICS

Semester- II
Course: I B. Sc (Computer Science)–Physics minor
Subject: Mechanics & properties of matter

CO1: Understand Newton's laws of motion and motion of variable mass system

CO2: Application to rocket motion and the concepts of impact parameter, scattering cross section.

CO3: Apply the rotational kinematic relations, the principle and working of gyroscope, its applications

CO4: The processional motion of a freely rotating symmetric top.

CO5: Comprehend the general characteristics of central forces.

CO6: The application of Kepler's laws to describe the motion of planets and satellite in circular orbit.

CO7: Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.

CO8: Examine phenomena of vectors and their applications in various physical quantities.

CO9: Acquire the knowledge on properties of matter and their applications.

Semester- III
Course: II B. Sc (Computer Science)–Physics minor
Subject: wave Optics

CO1: Understand the phenomenon of interference of light and its formation in (i) Lloyd's single mirror (ii) Thin films, Newton's rings and Michelson interferometer

CO2: Distinguish between Fresnel's diffraction and Fraunhoffer diffraction patterns in single slit.

CO3: Describe the construction and working of zone plate and the comparison of zone plate with convex lens.

CO4: Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.

CO5: Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.

CO6: Explain about the different aberrations in lenses and discuss the methods of minimizing them.

CO7: Understand the basic principles of fibre optic communication and explore the field of Holography and Nonlinear optics and their applications.

Semester- IV

Course: II B. Sc (Computer Science)–Physics minor

Subject: Electricity and Magnetism (4A)

CO1: Understand the Gauss law and its application to obtain electric field in different cases

CO2: formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant.

CO3: Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances.

CO4: Understand Biot-Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents.

CO5: Understanding the electric and magnetic fields and Maxwell's equations.

CO6: Phenomenon of resonance in LCR AC-circuits, sharpness of resonance, Q- factor, Power factor and the comparative study of series and parallel resonant circuits.

CO7: Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors

CO8: Understand the operation of basic logic gates and universal gates and their truth tables.

Semester- IV

Course: II B. Sc (Computer Science)–Physics minor (4B)

Subject: Modern Physics

CO1: Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics.

CO2: Develop critical understanding of concept of Matter waves and Uncertainty principle.

CO3: Get familiarized with the principles of quantum mechanics and Schrodinger wave equation.

CO4: Examine the basic properties of nuclei, characteristics of nuclear forces,

CO5: salient features of nuclear models and different nuclear radiation detectors.

CO6: Classify Elementary particles based on their mass, charge, spin, half-life and interaction.

CO7: Get familiarized with the nano materials, their unique properties and applications.

CO8: Increase the awareness and appreciation of superconductors and their practical applications

Semester- V

Course: III B. Sc (Physics)–MPC, MPCs

Subject: Applications of Electricity & Electronics (6C)

Course Outcomes

CO1: Identify various components present in Electricity & Electronics Laboratory.

CO2: Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.).

CO3: Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements.

CO4: Understand the need & Functionality of various DC & AC Power sources.

CO5: Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shoots.

Semester- V
Course: III B. Sc (Physics)–MPC, MPCs
Subject: Electronic Instrumentation (7C)

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 5: Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxy-meter etc. and know the handling procedures with safety and security

Semester- VI
Course: III B. Sc (Physics)–MPC, MPCs
Subject: Semester term Intern ship

PROGRAMME OUTCOMES FOR B. Sc (Physics) COURSE

On successful completion of Under Graduate programme (BSc), students will be able to:

PO 1: Acquire comprehensive Knowledge and effectively apply such knowledge and skills to address various issues.
PO 2: Acquire self-learning skills and adopt them for emerging demands at work place and life.
PO 3: Access ICT tools effectively and have a knowledge of software applications to analyze data.
PO 4: Develop scientific thinking process and use the technology for communication and entertainment and more for the benefit of mankind.
PO 5: Predict problems, frame hypothesis, investigate and interpret the empirical data.
PO 6: Learn group dynamics and deal individually as well as with teams and groups to perform effectively in diverse teams /groups.
PO7: Develop Efficient Communication & Life Skills and present significant information clearly and concisely to interested groups.
PO 8: Understand Environmental Sustainability, propagate and follow environment friendly practices.
PO 9: Identify the goals, objectives and components of a project and decide the appropriate time of completion.

PROGRAMME SPECIFIC OUT COMES B. SC (MPC)

PSO 1: Understand the theoretical concepts of physical and chemical properties of materials and the role of mathematics in dealing with them in a quantitative way.
PSO 2: Analyze the concepts of mathematics, physics and chemistry and understand the relation among them like physical chemistry, mathematical modelling of physics and chemistry problems. Skills needed to handle instruments.
PSO 3: Mathematical, numerical techniques required to model them.

PSO 4: Ability to interlink the skills and knowledge in mathematics, physics and chemistry and develop an aptitude to address the problems.

PSO 5: Learn problem solving techniques related to Mathematics, Physics and Chemistry

PROGRAMME SPECIFIC OUTCOMES B.SC (MPCS)

PSO 1: Understand the concepts of vector spaces, group theory, quantum mechanics, optical, thermal, electrical, mechanical properties of a materials, probability, algorithm design, data base

PSO 2: Understand the concepts of vector spaces, group theory, quantum mechanics, optical, thermal, electrical, mechanical properties of a materials, probability, algorithm design, data base

PSO 3: Analyze the concepts of mathematics, physics and computers science able to relate them in numerical programming of models of physical systems.

PSO 4: Acquire the skills to study the properties of materials, implementation of numerical algorithms by using various

PSO 5: Ability to interlink the skills developed and acquires an aptitude to address the problems in simulations of material properties, web and mobile app development.