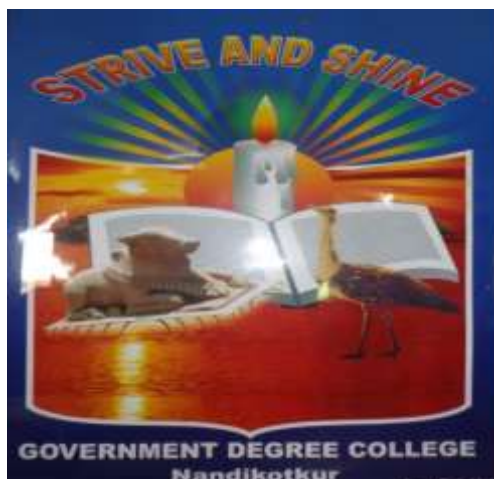


GOVERNMENT DEGREE COLLEGE

NANDIKOTKUR, Nandyal (Dist.,)

DEPARTMENT OF PHYSICS



PROGRAMME OUTCOMES (POs)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

COURSE OUTCOMES (COs)

PROGRAMME OUTCOMES

Students admitted in to B.Sc. Programme are expected to acquire the following outcomes

PO1	Domain Knowledge: Students understand the basic scientific principles and theories related to various phenomena in their disciplines and their relevance in the day-to-day life .Students develop demonstrating comprehensive knowledge and understanding of one or more other disciplines that form a part of an undergraduate programme of study.
PO2	Communication Skills: Students able to express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media, confidently share views and express herself/himself,
PO3	Critical thinking: Student will be able to analyze and synthesize data from a variety of sources and draw valid conclusions and support them with evidence and examples.
PO4	Creativity: Students will be able to • create, perform, or think in different and diverse ways about the same objects or scenarios, • innovate and perform tasks in a better manner
PO5	Teamwork / Coordination: Being able to facilitate a group's cooperative effort and act together as a group or team to achieve a common goal. Work effectively as an individual as well as a member of the team.
PO6	Digital and technological skills: The graduates will be able to demonstrate the capability to: • use ICT in a variety of learning and work situations, • access, evaluate, and use a variety of relevant information sources, and use appropriate software for analysis of data.
PO7	Research-related skills: The graduates will be able to demonstrate: • a keen sense of observation, inquiry, and capability for asking relevant/ appropriate questions, • the capacity to develop appropriate methodology and tools for data collection
PO8	Environmental awareness and action: The graduates should be able to demonstrate the acquisition of and ability to apply the knowledge, skills, attitudes, and values required to take appropriate actions for effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living
PO9	Community engagement and service: The graduates will be able to demonstrate the capability to participate in community-engaged services/ activities for promoting the wellbeing of society
PO10	career opportunities: Students after graduation have several career and employment opportunities such as research firms, agriculture industry, health care industry, pharmacy industry, chemical industry, diagnostic laboratories, software companies, banks, higher studies etc.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

The Department of Physics Government Degree College, Nandikotkur, Nandyal Dist. offers Three Year (comprising 6 semesters) Undergraduate Programme in Physics with objective of empowering students to acquire comprehensive understanding of Physics as an academic discipline. Upon completion of B.Sc. Physics Degree Programme successfully, the students shall acquire the following skills and competencies.

PSO Number	On successful completion of this course, the students will be able to:	PO Addressed
PSO1	Understand basic mechanics and properties of matter.	1
PSO2	Apply the theoretical concepts by laboratory experiments and gain the knowledge of Physics through theory and practicals.	3,4
PSO3	Understand the errors in measurements and learn to calculate the error and develop research-oriented skills.	3,7
PSO4	Understand the role of Physics in communication systems.	3,9
PSO5	Illustrate the principles of electricity, magnetism, thermodynamics, optics and spectroscopy.	1
PSO6	Identify, formulate and analyze complex problems using basic principles of mathematics, physics.	1,3
PSO7	Make aware and handle the different instruments.	5
PSO8	Design, construct and analyze basic electronic and digital circuits.	1,7
PSO9	Understand the growth of renewable energy sources, and its demand in 21st century.	8
PSO10	Develop experimental skills and independent work culture through a series of experiments that compliment theories and projects.	3,10

PSO – PO MAPPING

PO											
PSO		1	2	3	4	5	6	7	8	9	10
	1	*									
	2			*	*						
	3			*				*			
	4			*						*	
	5	*									
	6	*		*							
	7					*					
	8	*						*			
	9								*		
	10			*							*

COURSE OUTCOMES (COs)

SEMESTER-I

Course Code: 20C1307

Course Name: Mechanics, Waves & Oscillations

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	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	1,2
CO2	Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the precessional motion of a freely rotating symmetric top.	2,6
CO3	Explain central forces and the application of Kepler's laws to describe the motion of planets and satellite	1,2
CO4	Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.	2,6
CO5	Explain about Ultrasonic waves, their production and detection and their applications in different fields.	2,4

SEMESTER-II

Course Code: 20C2307

Course Name: Wave Optics

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	Understand the phenomenon of interference of light and its formation in Lioyd's single mirror, Newton's rings and Michelson interferometer	5,7
CO2	Distinguish between Fresnel's diffraction and Fraunhofer diffraction and observe the diffraction pattern	2,3,5
CO3	Describe the construction and working of zone plate and make the comparison of zone plate with convex lens	3,5,7
CO4	Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.	2,3
CO5	Understand the basic principles of fibre optic communication and explore the field of Holography.	2,4

SEMESTER-III**Course Code: 20C3307****Course Name: Heat &thermodynamics**

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	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	1
CO2	Gain knowledge on the basic concepts of thermodynamics, the first and the second lawof thermodynamics, the basic principles of refrigeration, the concept of entropy ,the thermodynamic potentials and their physical interpretations	1,2
CO3	Develop critical understanding of concept of Thermodynamic potentials, the formulation of Maxwell's equations and its applications.	1
CO4	Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.	1,3
CO5	Examine the nature of black body radiation and the basic theories	2

SEMESTER-IV**Course Code: 20C4307AA****Course Name: Electricity, Magnetism & Electronics**

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	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	5
CO2	Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances	5
CO3	Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves.	3,5
CO4	Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors	5.6
CO5	Understand the operation of basic logic gates and universal gates and their truth tables.Importans of Demorgan's theorems in digital circuits, Construction of Half adder&Full adder circuits	8

Course Code: 20C4307-BA**Course Name:Modern Physics**

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics	1,2
CO2	Develop critical understanding of concept of Matter waves and Uncertainty principle.	1
CO3	Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications	2
CO4	Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of Nuclear models and different nuclear radiation detectors	6
CO5	Get familiarized with the nano materials, their unique properties and applications	9
CO6	Increase the awareness and appreciation of superconductors and their practical applications.	8

SEMESTER-V

Long Term Internship

SEMESTER-VI

Course Code: 20C53076B

Course Name: Low Temperature Physics & Refrigeration

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	Identify various methods and techniques used to produce low temperatures in the Laboratory.	2
CO2	Acquire a critical knowledge on refrigeration and air conditioning	1
CO3	Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories.	3
CO4	Understand the classification, properties of refrigerants and their effects on environment.	10
CO5	Comprehend the applications of Low Temperature Physics and refrigeration.	2

Course Code: 20C53077B

Course Name: Solar Energy & Applications

CO Number	On successful completion of this course, the student will be able to:	PSO Addressed
CO1	Understand Sun structure, forms of energy coming from the Sun and its measurement	2
CO2	Acquire a critical knowledge on the working of thermal and photovoltaic collectors	9
CO3	Understand the various factors affecting the efficiency of solar cells, and measures to increase it.	4
CO4	Understand testing procedures and fault analysis of thermal collectors and PV modules.	9
CO5	Understand the various energy storage devices	10