



TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (MEN) NAGARKURNOOL

(AFFILIATED TO PALAMURU UNIVERSITY. CODE: 3391)

Nagarkurnool, @ Macharam (Jadcherla), Mahabubnagar (Dist.) – 509301

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DEPT

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES:

COURSE TITLE: PHYSICS

COURSE CODE: DSE-1 (2017 -2018)

CREDITS: 04

DEPARTMENT: PHYSICS

PROGRAMME OUTCOMES (POs):

B.SC.(MPCS&MPC)

PO1: Acquire knowledge in Physical Sciences with a thrust on fundamental principles and theories related to various scientific phenomena and their relevance in day-to-day life.

PO2: Graduates attain practical knowledge through hands-on training and project experience to meet the industrial needs.

PO3: Graduates develop critical thinking skills to identify, analyze and solve problems of their core areas using modern tools.

PO4: To enhance arithmetic skills and logical reasoning for better.

PO5: Graduates develop lifelong learning skills with interdisciplinary approach towards sustainable development.

PO6: Ability to communicate effectively the comprehended scientific data and knowledge, write effective reports, design documentation and make effective presentations.

PO7: Apply ethical, moral and social values in personal and professional life leading to highly cultured and civilized society.

PO8: Ability to work effectively as an individual or as a member or Team leader in diverse teams and in multidisciplinary environs.

PROGRAMME SPECIFIC OUTCOMES(PSOs) (DEPARTMENTAL):

B.SC. (MPCs &MPC)

Students will be able to:

PSO1: Students develop problem solving skills and methods and develop logical tools and models used to solve various real life problems.

PSO2: Students acquire knowledge of traditional and modern techniques of solving algebraic, transcendental equations, differential and integral equations, which have applications in many disciplines.

PSO3: The students attain sound knowledge in the areas of Mechanics, Thermal Physics, Waves and oscillations, optics, electromagnetism, modern physics, solid-state physics for pursuing higher education and research.

PSO4: Ability to design and develop software applications to address real time problems using Programming languages, Databases, Operating Systems, and Computer Network Concepts.

	COURSE OUTCOMES	Blooms taxonomy	
	SEMESTER -I(MECHANICS)		
CO1	Develop understanding on the concept of scalar, vector fields, Gradient,	UNDERSTAND -II	
CO2	Able to apply the Gauss, stokes and Greens theorems in related problems.	APPLY -III	
CO3	Identify and apply the laws of mechanics along with the necessary mathematics for solving numerically.	APPLY -III	
CO4	Describe Newton's laws of motion and conservation principles.	REMEMBER -I	

CO5	Able to articulate and describe relative motion, Inertial and non-inertial reference frames.	REMEMBER -I	
CO6	Understand the Mechanics of rigid bodies, concept of Gyroscope and establish the rotational Kinematic relations.	UNDERSTAND -II	
CO7	Understand and derive the Kepler's laws.	UNDERSTAND -II	
	COURSE OUTCOMES SEMESTER -II (WAVES&OSCILLATIONS)	BLOOM'S TAXONOMY LEVEL	
CO1	Understand physical characteristics of SHM and obtaining solution of the oscillator using differential equations	UNDERSTAND -II	
CO2	obtaining solution of the oscillator using differential equations and Lissajous figures	REMEMBER -I	

CO3	Calculate logarithmic decrement, relaxation factor and quality factor of a harmonic oscillator.	ANALYZ -IV	
CO4	Understand the concepts of mechanics, acoustics and the properties of matter	UNDERSTAND -II	
CO5	Solve wave equation and understand significance of transverse waves	ANALYZ -IV	
CO6	Solve wave equation of a longitudinal vibration in bars free at one end and also fixed at both the ends	ANALYZ -IV	
CO7			
	COURSE OUTCOMES SEMESTER- III(THERMAL PHYSICS)	BLOOM'S TAXONOMY LEVEL	
CO1	Recall the laws of gasses and Kinetic theory of gasses. Analyse the different transport	REMEMBER-I	

	Phenomena		
CO2	Understand the thermodynamic laws and entropy	UNDERSTAND -II	
CO3	Derive the equations of thermodynamic potentials and establishes the relation among them.	ANALYZ -IV	
CO4	Understand the Planks law, Wein's law and Rayleigh Jeans Law and Stefan's law and establishes relation among them.	UNDERSTAND -II	
CO5	Describe the experimental setups of optical pyrometers.	ANALYZ -IV	
CO6	Differentiate among Maxwell's Boltzmann, Bose-Einstein, Fermi-Dirac distribution laws	ANALYZ -IV	

CO67	Understand the concepts of phase space, Ensembles and postulates of statistical mechanics.	UNDERSTAND -II	
	COURSE OUTCOMES SEMESTER- IV (OPTICS)	BLOOM'S TAXONOMY LEVEL	
CO1	Apply the principles of wave motion and superposition to explain the Physics polarization, interference and diffraction.	APPLY -III	
CO2	Understand the applications of in design and working of interferometers.	UNDERSTAND -II	
CO3	Distinguish between Fresnel and Fraunhofer diffraction. Explain the different methods of polarization.	ANALYZ -IV	

CO4	Understand the properties and applications of light like reflection, refraction, interference, diffraction etc	UNDERSTAND -II	
CO5	Describe the experimental setup and working principle of Babinet's compensator.	ANALYZ -IV	
CO6	Explain the Physics polarization, interference and diffraction.	ANALYZ -IV	
CO7	Understand the different types of optical fibres and their structures	UNDERSTAND -II	
	COURSE OUTCOMES SEMISTER - VA(ELECTROMAGNETISM)	BLOOM'S TAXONOMY LEVEL	
CO1	Describe and understand the basic concepts underpinning electricity and magnetism such as potential and field.	ANALYZ -IV	

CO2	Understand the relationship between electric and magnetic fields.	UNDERSTAND -II	
CO3	Calculate the electrostatic and magnetic fields produced by static and moving charges in a variety of simple configurations.	ANALYZ -IV	
CO4	Apply those theoretical techniques to solve problems in any context underpinned by coupled linear differential equations.	APPLY -III	
CO5	Identify and apply appropriate theoretical techniques to solve a range of different problems in electromagnetism.	APPLY -III	
CO6	Calculate the electrostatic and magnetic fields produced by static and moving charges in a variety of simple configurations.	ANALYZ -IV	
	COURSE OUTCOMES SEMESTER-VBSOLID STATE PHSICS)	BLOOM'S TAXONOMY LEVEL	
CO1	Defines Atomic packing, Crystal, Lattice, Unit cell and Translation vectors. 2.Explains Crystal systems, Crystal planes and directions, Miller	ANALYZ -IV	

	indices, Diffraction of waves by crystals and Bragg's law.		
CO2	Knows Reciprocal space, Reciprocal lattice, Construction of reciprocal lattice, Reciprocal lattice vectors and Diffraction condition	UNDERSTAND -II	
CO3	Explains Reciprocal space and Laue equations and Brillouin zone.	ANALYZ -IV	
CO4	Defines Bonds in crystals, Inert gas crystals, Van der Waals-London interaction, Repulsive interaction and Binding energy. .Knows Ionic crystal, Madelung energy and constant. Defines Covalent, Metallic and Hydrogen bonds.	APPLY -III	
CO5	.Explains Optic and Acoustic phonon modes.Defines Thermal properties of phonons, heat capacity of phonons, Density of states and Density of states models of Debye and Einstein.	ANALYZ -IV	
CO6	Explains Fermi free electron gas, Fermi-Dirac distribution and temperature Defines free electron gas in 3 dimensional.Defines Energy bands, Bloch theory and Kronig-Penney model.	ANALYZ -IV	

CO7	Defines semiconductor crystals. Defines Direct and indirect band gap semiconductors.	ANALYZ -IV	
	COURSE OUTCOMES SEMESTER-VIA(MODERN PHYSICS)	BLOOM'S TAXONOMY LEVEL	
CO1	To understand the difference between Atomic and Molecular spectroscopies.	UNDERSTAND -II	
CO2	Understand the intuitive ideas of the Quantum physics and Nuclear physics.	UNDERSTAND -II	
CO3	Derive Schrodinger time dependent and time independent wave equations	ANALYZ -IV	
CO4	To understand dual nature of matter . Gain knowledge on classification of various crystal systems	UNDERSTAND -II	
CO5	Understand the basics of crystallography, x-ray diffraction and Superconductivity	UNDERSTAND -II	
CO6	Students will develop a comprehension of the current basis of broad knowledge in Modern physics.		

CO7	Distinguish among Zeeman, Paschal-Back and stark effect and understand experimental arrangement of Raman Spectra and its applications.	ANALYZ -IV	
	COURSE OUTCOMES SEMESTER-VIB (BASIC ELECTRONICS)	BLOOM'S TAXONOMY LEVEL	
CO1	To study basics of semiconductor & devices and their applications in different areas.	APPLY -III	
CO2	Analyze output in different operating modes of different semiconductor devices.	ANALYZ -IV	
CO3	Compare design issues, advantages, disadvantages and limitations of basic electronics.	ANALYZ -IV	
CO4	Understand the energy bands in solids and type of diodes.	UNDERSTAND -II	

CO5	Applies the logic gates in simple electronic circuits.	APPLY -III	
CO6	Understand the binary number system, hexa decimal and their conversion.	UNDERSTAND -II	
CO7	Design and implement hardware circuit to test performance and application.	APPLY -III	

TABLE 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	
1	H		H										
2	H	S	H	S				H					
3		S	H			S	S	H					

4	H	H	H	H		H	H							
5	H		H	H										

H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3

Pass percent between 75% - 85%= 2

Pass percent between 65%- 75%= 1

Pass percent of less than 65%= 0

		INTERNAL ASSESSMENT (40%)										EXTERNAL ASSESSMENT (60%)			
CO	WEEKLY		MIDSEMESTER		PRE-FINAL		ASSIGNMENT		VIVA			EXTERNAL EXAMS			
	PASS %	ATTAINMENT LEVEL	PASS %	ATTAINMENT LEVEL	PASS %	ATTAINMENT LEVEL	PASS %	ATTAINMENT LEVEL	PASS %	ATTAINMENT LEVEL	Co-Wise Internal Average	PASS%	ATTAINMENT LEVEL	Co-Wise External Average	CO-WISE TOTAL AVERAGE
		>85%=3		>85%=3		>85%=3	(cho ose	>85%=3 85-75%= 2 75-65%=1		>85%=3					

		85-75%= 2 75- 65%=1 <65%=0 (A)		85-75%= 2 75- 65%=1 <65%=0 (B)		85-75%= 2 75- 65%=1 <65%=0 (C)	the unit/ CO from whic h assig nme nt was given) (D)	<65%=0		85-75%= 2 75- 65%=1 <65%=0 (E)	(Avg of A,B,C, D,E) (F)		>85 %=3 85- 75% = 2 75- 65% =1 <65 %=0	(G)	(F)X 0.4+ (G) X 0.6 (K)
C01	97.35	3	94.54	3	98.21	3	100	3	100	3	3	94.34	3	3	3
C02	-----	-----	94.54	3	98.21	3	100	3	100	3	3	94.34	3	3	3
C03	-----	-----	94.54	3	98.21	3	100	3	100	3	3	94.34	3	3	3
C04	-----	-----	-----	-----	98.21	3	100	3	100	3	3	94.34	3	3	3
C05	-----	-----	-----	-----	98.21	3	100	3	100	3	3	94.34	3	3	3
TOTAL INTERNAL AVERAGE [Avg of all (F)]: 3														Total External Average (Avg of G): 3	Total CO attainmen t For Entire Course (Avg of K) 3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

Table 3: PROGRAMME OUTCOME MAPPING

[Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the 'S' points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**

Course outcomes	Programme Outcomes							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08
1	H(3)		H(3)					
2	H(3)		H(3)					H(3)

3			H(3)					H(3)
4	H(3)	H(3)	H(3)	H(3)		H(3)	H(3)	
5	H(3)		H(3)	H(3)				
Column (a)	Average of Cos for PO1 3	Average of Cos for PO2 3	Average of Cos for PO3 3	Average of Cos for PO4 3	Average of Cos for PO5	Average of Cos for PO6 3	Average of Cos for PO7 3	Average of Cos for PO8 3
Column (b)	Average of PO1: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3	Average of PO2: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3	Average of PO3: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3	Average of PO4: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3	Average of PO5: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2	Average of PO6: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3	Average of PO7: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3	Average of PO8: [(Column a) / 3 X Total CO attainment For Entire Course value in table 2 3
TOTAL PO ATTAINMENT:	(Average of all values in Column (b)): 3							

Please leave the blank columns as they are. Do not put zero for empty columns. Take the average of only the number of items entered.



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PSO4: Ability to design and develop software applications to address real time problems using Programming languages, Databases, Operating Systems, and Computer Network Concepts.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL	
	SEMESTER -I(MECHANICS)		
CO1	Develop understanding on the concept of scalar, vector fields, Gradient,	UNDERSTAND -II	
CO2	Able to apply the Gauss, stokes and Greens theorems in related problems.	APPLY -III	
CO3	Identify and apply the laws of mechanics along with the necessary mathematics for solving numerically.	APPLY -III	

CO4	Understand physical characteristics of SHM and obtaining solution of the oscillator using differential equations	REMEMBER -I	
CO5	Obtaining solution of the oscillator using differential equations and Lissajous figures	REMEMBER -I	
CO6	Understand the Mechanics of rigid bodies, concept of Gyroscope and establish the rotational Kinematic relations.	UNDERSTAND -II	
CO7	Understand and derive the Kepler's laws.	UNDERSTAND -II	
	COURSE OUTCOMES SEMESTER -II (THERMAL PHYSICS)	BLOOM'S TAXONOMY LEVEL	
CO1	Recall the laws of gasses and Kinetic theory of gasses. Analyse the different transport Phenomena	REMEMBER -I	

CO2	Understand the thermodynamic laws and entropy	UNDERSTAND -II	
CO3	Derive the equations of thermodynamic potentials and establishes the relation among them.	ANALYZING -IV	
CO4	Understand the Planks law, Wein's law and Rayleigh Jeans Law and Stefan's law and establishes relation among them.	UNDERSTAND -II	
CO5	Describe the experimental setups of optical pyrometers.	ANALYZING -IV	
CO6	Differentiate among Maxwell's Boltzmann, Bose-Einstein, Fermi-Dirac distribution laws	APPLY -III	
CO7	Understand the concepts of phase space, Ensembles and postulates of statistical mechanics.	UNDERSTAND -II	

	COURSE OUTCOMES SEMESTER- III(ELECTROMAGNETIC THEORY)	BLOOM'S TAXONOMY LEVEL	
CO1	Describe and understand the basic concepts underpinning electricity and magnetism such as potential and field.	ANALYZING -IV	
CO2	Understand the relationship between electric and magnetic fields.	UNDERSTAND -II	
CO3	Calculate the electrostatic and magnetic fields produced by static and moving charges in a variety of simple configurations.	ANALYZING -IV	
CO4	Apply those theoretical techniques to solve problems in any context underpinned by coupled linear differential equations.	APPLY -III	
CO5	Identify and apply appropriate theoretical techniques to solve a range of different problems in electromagnetism.	APPLY -III	
CO6	Calculate the electrostatic and magnetic fields produced by static and moving charges in a variety of simple configurations.	ANALYZING -IV	

CO67			
	COURSE OUTCOMES SEMESTER- IV (WAVES AND OPTICS)	BLOOM'S TAXONOMY LEVEL	
CO1	Apply the principles of wave motion and superposition to explain the Physics polarization, interference and diffraction.	APPLY -III	
CO2	Understand the applications of in design and working of interferometers.	UNDERSTAND -II	
CO3	Distinguish between Fresnel and Fraunhofer diffraction. Explain the different methods of polarization.	ANALYZING -IV	
CO4	Understand the properties and applications of light like reflection, refraction, interference, diffraction etc	UNDERSTAND -II	

CO5	Describe the experimental setup and working principle of Babinet's compensator.	ANALYZING -IV	
CO6	Explain the Physics polarization, interference and diffraction.	ANALYZING -IV	
CO7	Understand the different types of optical fibres and their structures	UNDERSTAND -II	
	COURSE OUTCOMES SEMISTER - V(MODERN PHYSICS)	BLOOM'S TAXONOMY LEVEL	
CO1	To understand the difference between Atomic and Molecular spectroscopies.	UNDERSTAND -II	
CO2	Understand the intuitive ideas of the Quantum physics and Nuclear physics.	UNDERSTAND -II	
CO3	Derive Schrodinger time dependent and time independent wave equations	ANALYZING -IV	

CO4	To understand dual nature of matter . Gain knowledge on classification of various crystal systems	UNDERSTAND -II	
CO5	Understand the basics of crystallography, x-ray diffraction and Superconductivity	UNDERSTAND -II	
CO6	Students will develop a comprehension of the current basis of broad knowledge in Modern physics.	APPLY -III	
CO6	Distinguish among Zeeman, Paschal-Back and stark effect and understand experimental arrangement of Raman Spectra and its applications.	ANALYZING -IV	
	COURSE OUTCOMES SEMESTER-VI(ELECTRONICS)	BLOOM'S TAXONOMY LEVEL	
CO1	To study basics of semiconductor & devices and their applications in different areas.		
CO2	Analyze output in different operating modes of different semiconductor devices.	ANALYZING -IV	

CO3	Compare design issues, advantages, disadvantages and limitations of basic electronics.	UNDERSTAND -II	
CO4	Understand the energy bands in solids and type of diodes.	UNDERSTAND -II	
CO5	Applies the logic gates in simple electronic circuits.	APPLY -III	
CO6	Understand the binary number system, hexa decimal and their conversion.	UNDERSTAND -II	
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1	H		H										
2	H	S	H	S				H					

		>85%=3 85-75%= 2 75- 65%=1 <65%=0 (A)		>85%=3 85-75%= 2 75- 65%=1 <65%=0 (B)		>85%=3 85-75%= 2 75- 65%=1 <65%=0 (C)	(cho ose the unit/ CO from whic h assign ment was given)	>85%=3 85-75%= 2 75-65%=1 <65%=0 (D)		>85%=3 85-75%= 2 75- 65%=1 <65%=0 (E)	al Avera ge (Avg of A,B,C, D,E) (F)		LEVE L >85 %=3 85- 75% = 2 75- 65% =1 <65 %=0 (G)		(F)X 0.4+ (G) X 0.6 (K)
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C03	-----	-----	94.54	3	98.21	3	100	3	100	3	3	94.34	3	3	3
C04	-----	-----	-----	-----	98.21	3	100	3	100	3	3	94.34	3	3	3
C05	-----	-----	-----	-----	98.21	3	100	3	100	3	3	94.34	3	3	3
TOTAL INTERNAL AVERAGE [Avg of all (F)]: 3														Total External Average (Avg of G): 3	Total CO attainmen t For Entire Course (Avg of K)

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

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Course outcomes	Programme Outcomes							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
1	H(3)		H(3)					

2	H(3)		H(3)					H(3)
3			H(3)					H(3)
4	H(3)	H(3)	H(3)	H(3)		H(3)	H(3)	
5	H(3)		H(3)	H(3)				
Column (a)	Average of Cos for PO1 3	Average of Cos for PO2 3	Average of Cos for PO3 3	Average of Cos for PO4 3	Average of Cos for PO5	Average of Cos for PO6 3	Average of Cos for PO7 3	Average of Cos for PO8 3
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TOTAL PO ATTAINMENT:	(Average of all values in Column (b):							

	3
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