As per the NEP 2020

Minor Course (Science)

(Effective from Academic Year 2024-2025 onwards)

Pandit Deendayal Upadhyaya Shekhawati University

Sikar (Rajasthan) 307026

E-mail: reg.shekhauni@gmail.com

Website: www.shekhauni.ac.in

Dy. Registrar
Pandit Deendayal Upadhyaya
Shekhawati University,
Sikar(Rajasthan)

Science

Minor Subject Syllabus

(CBCS) As per the NEP 2020 (Semester I to IV)

w.e.f. the Academic Session 2024-25

Discipline: Physics

Semester	Course title	Credits	Course Code	Credit distribution of the course			Eligibility criteria
				Lecture	Tutorial	Practical/ Practice	
I	Mechanics and Heat Transmission	2	24BPH5101M	2	0	0	10+2 from any recognized Board
II	Wave Theory and Optics	2	24BPH5201M	2	0	0	
III	Electromagnetism	4	24BPH6301M	4	0	0	
IV	Semiconductor and Modern Physics	4	24BPH6401M	4	0	0	

Mechanics and Heat Transmission

Learning Objectives: The objective of this course is to introduce the different phenomena that exist in the world around us. It aims to give an understanding of this world both by observation and prediction of the way in which such objects behave. The course will help students to apply the basic concepts and principles in different applications.

Learning Outcomes: On completion of the course the student will be able to understand the the different aspects of mechanics, Concept of force and its applications, Gravitation and different properties of matter. It also helps them to understand the basic heat transmission methods which will help them to understand different phenomena's related to daily life.

Course Title:	Mechanics and heat transmission	Course Code: 24BPH5101M
Total Lecture 26		
		Hours
Unit I	Distance, Displacement, Speed, Velocity, Acceleration, Equations of motion, Laws of motion, Force, Energy, Work, Power	7
Unit II	Universal law of gravitation, Gravitational acceleration, Kepler's law, Escape velocity, Motion of satellite	6
Unit III	Properties of Matter: Elasticity, Hooks law, Modulus of elasticity, Pressure, Surface tension with applications(only introduction)	7
Unit IV	Heat, Transfer of heat, Modes of heat transmission of Heat, Idea of conduction, convection and radiation	6
Reference Books:		
1	Concept of Physics by H.C. Verma, Vol I, Bharti Bhawan Ltd., New Delhi	
2	A text book of Applied Physics by N.S.Kumar	
3	Practical Physics by C.L. Arora, S. Chand Publication	

Dy. Registrar
Pandit Deendayal Upadhyaya
Shekhawati University,
Sikar(Rajasthan)

Wave Theory and Optics

Learning Objectives: The objective of this course is to introduce the different Aspects of Wave theory and Optics.

Learning Outcomes: On completion of the course the student will be able to understand the use of waves in our daily life. They will understand about the propogation of sound waves and also about the different effects observed in our daily life

Course Title:	Wave theory and optics	Course Code: 24BPH5201M
Total Lecture 26		
		Hours
Unit I	Light, Reflection of light, Laws of reflections, Reflection through plane and spherical mirrors, Mirror formula	6
Unit II	Refraction of light, Snell's law, Lens, Refraction through prism, Total internal reflection and it's applications	7
Unit III	Wave motion, Longitudinal and transverse waves, Sound wave, types of sound waves, Propagation of sound waves	6
Unit IV	Introduction of Interference, Diffraction, Polarization, Scattering of light	7
Reference Books:		
1	Concept of Physics by H.C. Verma, Vol I, Bharti Bhawan Ltd., New Delhi	
2	A text book of Applied Physics by N.S.Kumar	
3	Practical Physics by C.L. Arora, S. Chand Publication	

Electromagnetism

Learning Objectives: The objective of this course is to introduce the different phenomena of electrostatics which exists in our day to day life..

Learning Outcomes: On completion of the course the student will be able to understand about charges, electric field, magnetic field, Ac and Dc current and also the use of electricity in our daily life

Course Title:	Electromagnetism	Course Code: 24BPH6301M
Total Lecture 52		
		Hours
Unit I	Coulomb's law, Electric field, Electric flux, Electric dipole and dipole moment	13
Unit II	Magnetic field, Magnetic lines of force, force on moving charge,	13
Unit III	Direct and alternating current, Electromagnetic induction, Faraday's law, Lenz's law, AC generator, Transformer	13
Unit IV	Electric current, Resistance, Ohm's law, Series and parallel combination of resistances, Internal resistance,	13
Reference Books:		
1	Concept of Physics by H.C. Verma, Vol I, Bharti Bhawan Ltd., New Delhi	
2	A text book of Applied Physics by N.S.Kumar	
3	Practical Physics by C.L. Arora, S. Chand Publication	

Semiconductor and Modern Physics

Learning Objectives: The objective of this course is to introduce about the modern part of Physics like semiconductors, semiconductor devices and also about some aspects of modern Physics

Learning Outcomes: On completion of the course the student will be able to understand the classification of materials on the basis of their electrical behavior and also about some elementary Quantum mechanics and Nuclear Physics.

Course Title:	Semiconductor and Modern Physics	Course Code: 24BPH6401M
Total Lecture 52		
		Hours
Unit I	Types of materials (Insulator, Semiconductor, Conductor), Type of semiconductors, Use of Semiconductor	**14**
Unit II	P-N Junction diode, Zener diode, Photo diode, Introduction of power supply	**13**
Unit III	De Broglie hypothesis, Matter waves, Uncertainty principle	**14**
Unit IV	Nucleus, Nuclear fission and fusion, Radioactivity	**11**
Reference Books:		
2	Concept of Physics by H.C. Verma, Vol I, Bharti Bhawan Ltd., New Delhi	
3	A text book of Applied Physics by N.S.Kumar	
4	Practical Physics by C.L. Arora, S. Chand Publication	

Dy. Registrar
Pandit Deendayal Upadhyaya
Shekhawati University,
Sikar(Rajasthan)