

Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur
(An Autonomous Institute Affiliated to Rajasthan Technical University, Kota)

Teaching and Examination Scheme-2024-25

B.Tech. I Year (Semester I & II)

Sr. No.	SEM.	Course Code	Course Name	Category	Teaching Scheme			Exam Hrs.	Marks			Credit
					L	T	P		CIE	SEE	Total	
1	I	MAUL101	Engineering Mathematics-I	BSC	3	1	0	3	40	60	100	4
2	I	PHUL101/CHUL101	Engineering Physics/Engineering Chemistry	BSC	3	1	0	3	40	60	100	4
3	I	HSUL101/HSUL102	Communication Skills/Universal Human Values	HSMC	2	0	0	3	40	60	100	2
4	I	CSUL101	Computational Thinking and Programming	ESC	2	0	0	3	40	60	100	2
5	I	EEUL101	Basic Electrical & Electronics Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	2	0	0	3	40	60	100	2
		CEUL101	Basic Civil Engineering (EE/ECE/ME)	ESC	2	0	0	3	40	60	100	
		MEUL101	Basic Mechanical Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	2	0	0	3	40	60	100	
6	I	PHUP120/CHUP120	Engineering Physics Lab/ Engineering Chemistry Lab	BSC	0	0	2	3	60	40	100	1
7	I	HSUP120/HSUP121	Language Lab/ Universal Human Values Lab	HSMC	0	0	2	3	60	40	100	1
8	I	CSUP120	C Programming Lab	ESC	0	0	2	3	60	40	100	1
9	I	EEUP120	Basic Electrical & Electronics Engineering Lab (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	0	0	2	3	60	40	100	1
		CEUP120	Basic Civil Engineering Lab (EE/ECE/ME)	ESC	0	0	2	3	60	40	100	
		MEUP120	Manufacturing Practice Workshop (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	0	0	2	3	60	40	100	
10	I	MEUP121/ MEUP122	Computer Aided Engineering Graphics/Computer Aided Machine Drawing	ESC	0	0	3	3	60	40	100	1.5
11	I	XXUA100	Social Outreach, Discipline and Extra-Curricular Activities (SODECA)	SODECA	-	-	0.5	-	-	-	-	0.5
12	I	NU99.X	Audit Course	NC	-	-	-	3	40	60	100	0
									Total Credit			20

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Sr. No.	SEM.	Course Code	Course Name	Category	Teaching Scheme			Exam Hrs.	Marks			Credit
					L	T	P		CIE	SEE	Total	
1	II	MAUL201	Engineering Mathematics-II	BSC	3	1	0	3	40	60	100	4
2	II	PHUL201/CHUL201	Engineering Physics/Engineering Chemistry	BSC	3	1	0	3	40	60	100	4
3	II	HSUL201/HSUL202	Communication Skills/Universal Human Values	HSMC	2	0	0	3	40	60	100	2
4	II	HSUL203	Innovation & Entrepreneurship	HSMC	1	0	0	3	40	60	100	1
5	II	CSUL201	Problem Solving using Object Oriented Paradigm	ESC	2	0	0	3	40	60	100	2
6	II	EEUL201	Basic Electrical & Electronics Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	2	0	0	3	40	60	100	2
		CEUL201	Basic Civil Engineering (EE/ECE/ME)	ESC	2	0	0	3	40	60	100	
		MEUL201	Basic Mechanical Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	2	0	0	3	40	60	100	
7	II	PHUP220/CHUP220	Engineering Physics Lab/ Engineering Chemistry Lab	BSC	0	0	2	3	60	40	100	1
8	II	HSUP220/HSUP221	Language Lab/ Universal Human Values Lab	HSMC	0	0	2	3	60	40	100	1
9	II	CSUP220	Object Oriented Programming Lab	ESC	0	0	2	3	60	40	100	1
10	II	EEUP220	Basic Electrical & Electronics Engineering Lab (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	0	0	2	3	60	40	100	1
		CEUP220	Basic Civil Engineering Lab (EE/ECE/ME)	ESC	0	0	2	3	60	40	100	
		MEUP220	Manufacturing Practice Workshop (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	0	0	2	3	60	40	100	
11	II	MEUP221/ MEUP222	Computer Aided Engineering Graphics/Computer Aided Machine Drawing	ESC	0	0	3	3	60	40	100	1.5
12	II	XXUA200	Social Outreach, Discipline and Extra-Curricular Activities (SODECA)	SODECA	-	-	0.5	-	-	-	-	0.5
13	I	NU99.X	Audit Course		-	-	-	3	40	60	100	0
									Total Credit			21



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Syllabus

Name of the Programme: B.Tech.	Year: I	Semester: I / II
Course Name: Engineering Physics	Course Code: PHUL101/ PHUL201	Credit: 4
Max Marks: 100	CIE: 40	SEE: 60
End Term Exam Time: 3 Hrs	Teaching Scheme: 3L+1T	

Module no.	Contents	Hours
1	Introduction: Objective, Scope, Outcome of the Course and Prerequisite	1
2	Unit- I : Interference of Light Thin films Interference, Newton's Rings, Applications of Newton's Rings: Determination of wavelength of light, Determination of the refractive index of liquid, Michelson's Interferometer, Application of Michelson's Interferometer: Determination of wavelength of light, Determination of wavelength separation of two nearby wavelengths, Application of Interference in Optical technology: Anti-reflection coating and interference filters.	9
3	Unit-II : Diffraction of light Definition and types of diffraction, Fraunhofer diffraction at a single slit: quantitative analysis, positions of maxima and minima, width of central maximum, intensity distribution, Fraunhofer diffraction due to a plane diffraction grating or N- Parallel slits: quantitative analysis, positions of maxima and minima, intensity distribution, determination of wavelength of light using plane transmission grating. Real life applications of diffraction.	9
4	Unit-III : Materials of Technological Importance Dielectric Materials: Electric field in presence of dielectric medium, concept of electric polarization, concept of dielectric loss and loss energy and their importance, The Clausius–Mossotti relation. Semiconducting Materials: Concept of energy bands in solids, classifications of solids, types of semiconductors, carrier concentration and conductivity in intrinsic and extrinsic semiconductors, Hall effect in semiconductors and its application. Superconducting Materials: Resistivity and susceptibility of superconductors, type – I and type – II superconductors, Meissner effect, low temperature superconductors, high temperature superconductors, BCS theory (Qualitative).	9
5	Unit-IV: Photonics Laser: Interaction of radiation with matter, spontaneous and stimulated emission, Einstein's coefficients, properties of a laser beam, theory of laser action: threshold condition for laser action, components of a laser system, types of lasers: He-Ne laser, semiconductor Laser, applications of laser in science, engineering, and medical field. Fibre Optics: Structure of optical fibre, principle of light transmission through an optical fiber, optical fiber as optical waveguide, classification of optical fibres, acceptance cone and numerical aperture of a step index optical fibre, advantages and applications of optical fibres.	9
6	Unit-V: Quantum Mechanics Origin of quantum theory, matter waves, wave function and its physical interpretation, basic postulates of quantum mechanics, time-dependent and time-independent Schrodinger equations, Applications of time independent Schrodinger equation: free particle trapped in infinite potential well, free particle trapped in three-dimensional box, concept of degeneracy of energy levels, quantum mechanical tunneling (qualitative description: alpha decay).	8
Total		45



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Text Books:

1. Engineering Physics by H. K. Malik & A. K. Singh; McGraw Hill
2. Engineering Physics by G. Aruldas; PHI Learning Pvt. Ltd.
3. Engineering Physics by S. Mani Naidu; Pearson India
4. Engineering Physics by G. S. Raghuvanshi; PHI Learning Pvt. Ltd.
5. Engineering Physics: Theory and Practical by A. K. Katiyar & C. K. Panday; Wiley India
6. A Textbook of Engineering Physics by M. N. Avadhanulu; S. Chand Publishing

Reference Books:

1. Optics by Ghatak, McGraw Hill
2. A text book of Optics by N. Subrahmanyam & Brij Lal, S. Chand & Company
3. Concept of Modern Physics: by Arthur Besier; McGraw Hill
4. Solid State Physics by S. O. Pillai; New Age International (P) Limited
5. Material Science: Smith (McGraw Hill) sixth edition.
6. Fiber Optics and Lasers by Ajoy Ghatak and K. Thyagarajan, Laxmi Publications
7. Modern Physics by Aruldas & Rajagopal; Prentice Hall India Learning Pvt. Ltd.

Prerequisite:

1. Light and its characteristics, Reflection, refraction and transmission of light rays and relevant laws, Total internal reflection
2. Classification of matter, Electrical properties of matter, Atomic structure and bonding
3. Basic knowledge of different types of materials
4. Capability of doing mathematics like Integration, Differentiation, Graphical Analysis, Vector algebra etc.