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Bachelor of Science (B.Sc.) (Physics)

**Credit Structure, Scheme and Syllabus
[NEP-2020, 3-2-1 Pattern]**

Session 2026-2027 onwards

**Submitted by
Board of Studies (Physics)**

FYUGP-Scheme I-VIII Semester (3-2-1 Pattern)
Bachelor of Science (Honors/Research) (Physics - Major)
Four Year (Eight Semester Degree Course) Teaching and Examination Scheme

Abbreviations: Discipline Specific Core: **DSC**, Discipline Specific Elective: **DSE**, Generic/Open Electives: **GE/OE**, Vocational Skills & Skill Enhancement Courses: **SEC**, Vocational Skill Courses: **VSC**, Skill Enhancement Courses: **SEC**, Ability Enhancement Courses: **AEC**, Indian Knowledge Systems: **IKS**, Value Education Courses: **VEC**, On Job Training (Internship/Apprenticeship): **OJT**, Field Project: **FP**, Community Engagement & Service: **CEP**, Co-curricular Courses: **CC**, Research Methodology: **RM**, Research Project: **RP**, Continuous Internal Evaluation: **CIE**, Semester End Exam: **SEE**

Level: 4.5 (First Year)

B.Sc. SEM - I (Physics - Major)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Subject- 1	DSC	BPH1DSC01T	Measurement, Mechanics, and Material Properties (Theory)	2	2	20	30	50
	DSC	BPH1DSC01P	Measurement, Mechanics, and Material Properties (Practical)	2	4	20	30	50
Subject- 2	DSC		Subject 2_Paper 1 (Theory)	2	2	20	30	50
	DSC		Subject 2_Paper 1 (Practical)	2	4	20	30	50
Subject- 3	DSC		Subject 3_Paper 1 (Theory)	2	2	20	30	50
	DSC		Subject 3_Paper 1 (Practical)	2	4	20	30	50
GE/OE_1	GE/OE	BPH1GOE01T	Physics of Sports (Theory) For other faculty students [Refer GE/OE basket]	2	2	20	30	50
SEC_1	SEC	BPH1SEC01P	Electrical Wiring for Domestic Applications (Practical)	2	4	20	30	50
IKS_1	IKS	B1IKS01T	IKS-Generic (Theory)	2	2	20	30	50
Language	AEC	BS1AEC01T	Compulsory English (Theory)	2	2	20	30	50
VEC_1	VEC	B1VEC01T	Environmental Studies (Theory)	2	2	20	30	50
			Total	22	30	220	330	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

Level: 4.5 (First Year)

B.Sc. SEM - II (Physics - Major)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Subject- 1	DSC	BPH2DSC02T	Semiconductor Physics and Devices (Theory)	2	2	20	30	50
	DSC	BPH2DSC02P	Semiconductor Physics and Devices (Practical)	2	4	20	30	50
Subject- 2	DSC		Subject 2_Paper 2 (Theory)	2	2	20	30	50
	DSC		Subject 2_Paper 2 (Practical)	2	4	20	30	50
Subject- 3	DSC		Subject 3_Paper 2 (Theory)	2	2	20	30	50
	DSC		Subject 3_Paper 2 (Practical)	2	4	20	30	50
GE/OE_2	GE/OE	BPH2GOE02T	Physics in Daily Life (Theory) For other faculty students [Refer GE/OE basket]	2	2	20	30	50
SEC_2	SEC	BPH2SEC02P	Fundamentals of Data Analysis and Data Interpretation (Practical)	2	4	20	30	50
Language	AEC	BS2AEC02T	Second Language (Theory)	2	2	20	30	50
VEC_2	VEC	B2VEC02T	Constitution of India (Theory)	2	2	20	30	50
CC_1	CC	BPH2CC01P	Co-Curricular (Practical) [Refer CC basket]	2	4	50	---	50
			Total	22	32	250	300	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

- **Exit Option:** Award of Certificate in Major with 44 credits and an additional 4 credits core NSQF Course/Internship or continue with major and minor.
- **Continue Options:** Student will select one subject among the (Subject-1, Subject-2, and Subject-3) as major and another as minor and third subject will be dropped.

Level: 5.0 (Second Year)

B.Sc. SEM - III (Physics - Major)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH3DSC03T	Oscillations, Waves and Thermal Physics (Theory)	2	2	20	30	50
	DSC	BPH3DSC04T	Wave Optics and Electromagnetic Waves (Theory)	2	2	20	30	50
	DSC	BPH3DSC03P	Oscillations, Waves and Thermal Physics & Wave Optics and Electromagnetic Waves (Practical)	2	4	20	30	50
	VSC	BPH3VSC01P	Electronic and Electrical Components (Practical)	2	4	20	30	50
	FP	BPH3FP01P	Major Specific (Practical)	2	4	50	---	50
Minor	Minor	BPH3MN03T	Wave Optics and Electromagnetic Waves (Theory)	2	2	20	30	50
	Minor	BPH3MN03P	Wave Optics and Electromagnetic Waves (Practical)	2	4	20	30	50
GE/OE_3	GE/OE	BPH3GOE03T	Astronomy and the Universe (Theory) For other faculty students [Refer GE/OE basket]	2	2	20	30	50
IKS_2	IKS	BPH3IKS02T	Indian Physicists and their contribution (Theory)	2	2	20	30	50
Language	AEC	BS3AEC03T	Second Language (Theory)	2	2	20	30	50
CC_2	CC	BPH3CC02P	Co-Curricular (Practical) [Refer CC basket]	2	4	50	---	50
			Total	22	32	280	270	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

Level: 5.0 (Second Year)

B.Sc. SEM - IV (Physics - Major)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH4DSC05T	Mathematical Physics (Theory)	2	2	20	30	50
	DSC	BPH4DSC06T	LASERs and Fiber Optics (Theory)	2	2	20	30	50
	DSC	BPH4DSC04P	Mathematical Physics & LASERs and Fiber Optics (Practical)	2	4	20	30	50
	VSC	BPH4VSC02P	Regulated Power Supply (Practical)	2	4	20	30	50
	CEP	BPH4CEP01P	Community Engagement Program (Practical)	2	4	50	---	50
Minor	Minor	BPH4MN04T	LASERs and Fiber Optics (Theory)	2	2	20	30	50
	Minor	BPH4MN04P	LASERs and Fiber Optics (Practical)	2	4	20	30	50
GE/OE_4	GE/OE	BPH4GOE04T	Physics of Sound and Music (Theory) For other faculty students [Refer GE/OE basket]	2	2	20	30	50
SEC_3	SEC	BCH4SEC03P	Advanced Experimentation (Practical)	2	4	20	30	50
Language	AEC	BS4AEC04T	Second Language (Theory)	2	2	20	30	50
CC_3	CC	BPH4CC03P	Co-Curricular (Practical) [Refer CC basket]	2	4	50	---	50
			Total	22	34	280	270	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

- **Exit Option:** Award of UG Diploma in Major and Minor with 88 credits and an additional 4 credits in core NSQF Course/Internship or continue with major and minor.

Level: 5.5 (Third Year)

B.Sc. SEM - V (Physics - Major)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH5DSC07T	Electrostatics and Electric Currents (Theory)	2	2	20	30	50
	DSC	BPH5DSC08T	Magnetostatics and Magnetism (Theory)	2	2	20	30	50
	DSC	BPH5DSC09T	Electronic Devices and Circuits (Theory)	2	2	20	30	50
	DSC	BPH5DSC108T	Solid State Physics – I (Theory)	2	2	20	30	50
	DSC	BPH5DSC05P	Electrostatics and Electric Currents & Magnetostatics and Magnetism (Practical)	2	4	20	30	50
	DSC	BPH5DSC06P	Electronic Devices and Circuits & Solid State Physics – I (Practical)	2	4	20	30	50
	DSE**	BPH5DSE01AT	A. Digital Electronics and Microprocessors (Theory) OR	2	2	20	30	50
		BPH5DSE01BT	B. Optoelectronics and Devices (Theory)					
	DSE**	BPH5DSE01P	A. Digital Electronics and Microprocessors (Practical) OR	2	4	20	30	50
			B. Optoelectronics and Devices (Practical)					
	VSC	BPH5VSC03P	Optical Instruments (Practical)	2	4	20	30	50
	CEP	BPH5CEP02P	Community Engagement Program (Practical)	2	4	50	---	50
Minor	Minor	BPH5MN05T	Electronic Devices and Circuits (Theory)	2	2	20	30	50
			Total	22	32	250	300	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

**Students are required to select any one Elective Theory Paper and corresponding Practical from given options.

Level: 5.5 (Third Year)

B.Sc. SEM - VI (Physics - Major)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH6DSC11T	Classical Mechanics - I (Theory)	2	2	20	30	50
	DSC	BPH6DSC12T	Quantum Mechanics - I (Theory)	2	2	20	30	50
	DSC	BPH6DSC13T	Atomic and Molecular Physics (Theory)	2	2	20	30	50
	DSC	BPH6DSC14T	Solid State Physics – II (Theory)	2	2	20	30	50
	DSC	BPH6DSC07P	Classical Mechanics - I & Quantum Mechanics - I (Practical)	2	4	20	30	50
	DSC	BPH6DSC08P	Atomic and Molecular Physics & Solid State Physics – II (Practical)	2	4	20	30	50
	DSE**	BPH6DSE02AT	A. Analogue and Communication Electronics (Theory) OR	2	2	20	30	50
		BPH6DSE02BT	B. Astrophysics and Special Theory of Relativity (Theory)					
	DSE**	BPH6DSE02P	A. Analogue and Communication Electronics (Practical) OR	2	4	20	30	50
			B. Astrophysics and Special Theory of Relativity (Practical)					
	VSC	BPH6VSC04P	Installation of Rooftop Solar Systems (Practical)	2	4	20	30	50
	OJT	BPH6OJT01P	On The Job Training (Practical) Major Specific	4	8	40	60	100
			Total	22	34	220	330	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

**Students are required to select any one Elective Theory Paper and corresponding Practical from given options.

- **Exit Option:** Award of UG Degree in Major with 132 credits or continue with major and minor.

Level: 6.0 (Fourth Year)

B.Sc. SEM - VII (Physics - Honors)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH7DSC15T	Quantum Mechanics – II (Theory)	2	2	20	30	50
	DSC	BPH7DSC16T	Electrodynamics (Theory)	2	2	20	30	50
	DSC	BPH7DSC17T	Statistical Physics (Theory)	2	2	20	30	50
	DSC	BPH7DSC18T	Advanced Mathematical Physics (Theory)	2	2	20	30	50
	DSC	BPH7DSC19T	Classical Mechanics – II (Theory)	2	2	20	30	50
	DSC	BPH7DSC09P	Quantum Mechanics – II, Electrodynamics & Statistical Physics (Practical)	2	4	20	30	50
	DSC	BPH7DSC10P	Advanced Mathematical Physics & Classical Mechanics – II (Practical)	2	4	20	30	50
	DSE**	BPH7DSE03AT	A. Experimental Techniques in Physics (Theory) OR	2	2	20	30	50
		BPH7DSE03BT	B. Sources of Energy and Energy Storage Devices (Theory)					
	DSE	BPH7DSE03P	A. Experimental Techniques in Physics (Practical) OR	2	4	20	30	50
			B. Sources of Energy and Energy Storage Devices (Practical)					
	RM	BPH7RM01T	Research methodology (Theory)	2	2	20	30	50
	RM	BPH7RM01P	Research methodology (Practical)	2	4	20	30	50
			Total	22	30	220	330	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

**Students are required to select any one Elective Theory Paper and corresponding Practical from given options.

Level: 6.0 (Fourth Year)

B.Sc. SEM - VIII (Physics - Honors)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH8DSC20T	Numerical Methods and Complex Analysis (Theory)	2	2	20	30	50
	DSC	BPH8DSC21T	Spectroscopy (Theory)	2	2	20	30	50
	DSC	BPH8DSC22T	Nuclear and Particle Physics (Theory)	2	2	20	30	50
	DSC	BPH8DSC23T	Advanced Electrodynamics (Theory)	2	2	20	30	50
	DSC	BPH8DSC24T	Quantum Information and Quantum Computing (Theory)	2	2	20	30	50
	DSC	BPH8DSC11P	Numerical Methods and Complex Analysis & Spectroscopy (Practical)	2	4	20	30	50
	DSC	BPH8DSC12P	Advanced Electrodynamics, Nuclear and Particle Physics & Quantum Information and Quantum Computing (Practical)	2	4	20	30	50
	DSE**	BPH8DSE04AT	A. Biophysics and Biodevices (Theory) OR	2	2	20	30	50
		BPH8DSE04BT	B. Nanomaterials and Properties (Theory)					
	DSE**	BPH8DSE04P	A. Biophysics and Biodevices (Practical) OR	2	4	20	30	50
			B. Nanomaterials and Properties (Practical)					
	OJT	BPH8OJT02P	Major Specific (Practical)	4	8	40	60	100
			Total	22	32	220	330	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

**Students are required to select any one Elective Theory Paper and corresponding Practical from given options.

- **Exit Option:** Award of UG Honors Degree in major and minor with 176 credits.

Level: 6.0 (Fourth Year)

B.Sc. SEM - VII (Physics - Honors with Research)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH7DSC15T	Quantum Mechanics –II (Theory)	2	2	20	30	50
	DSC	BPH7DSC16T	Electrodynamics (Theory)	2	2	20	30	50
	DSC	BPH7DSC17T	Statistical Physics (Theory)	2	2	20	30	50
	DSC	BPH7DSC09P	Quantum Mechanics –II & Electrodynamics (Practical)	2	4	20	30	50
	DSC	BPH7DSC10P	Electrodynamics & Statistical Physics (Practical)	2	4	20	30	50
	DSE**	BPH7DSE03AT	A. Experimental Techniques in Physics (Theory) OR	2	2	20	30	50
		BPH7DSE03BT	B. Sources of Energy and Energy Storage Devices (Theory)					
	DSE**	BPH7DSE03P	A. Experimental Techniques in Physics (Practical) OR	2	4	20	30	50
			B. Sources of Energy and Energy Storage Devices (Practical)					
	RM	BPH7RM01T	Research methodology (Theory)	2	2	20	30	50
	RM	BPH7RM01P	Research methodology (Practical)	2	4	20	30	50
	RP	BPH7RP01P	Research project (Practical)	4	8	40	60	100
			Total	22	34	220	330	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

**Students are required to select any one Elective Theory Paper and corresponding Practical from given options.

Level: 6.0 (Fourth Year)

B.Sc. SEM - VIII (Physics - Honors with Research)

Course Type	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
Major	DSC	BPH8DSC20T	Numerical Methods and Complex Analysis (Theory)	2	2	20	30	50
	DSC	BPH8DSC21T	Spectroscopy (Theory)	2	2	20	30	50
	DSC	BPH8DSC22T	Nuclear and Particle Physics (Theory)	2	2	20	30	50
	DSC	BPH8DSC11P	Numerical Methods and Complex Analysis & Spectroscopy (Practical)	2	4	20	30	50
	DSC	BPH8DSC12P	Spectroscopy & Nuclear and Particle Physics (Practical)	2	4	20	30	50
	DSE**	BPH8DSE04AT	A. Biophysics and Biodevices (Theory) OR	2	2	20	30	50
		BPH8DSE04BT	B. Nanomaterials and Properties (Theory)					
	DSE**	BPH8DSE04P	A. Biophysics and Biodevices (Practical) OR	2	4	20	30	50
			B. Nanomaterials and Properties (Practical)					
	RP	BPH8RP02P	Research project (Practical)	8	16	80	120	200
			Total	22	36	220	330	550

*Minimum passing marks in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.

**Students are required to select any one Elective Theory Paper and corresponding Practical from given options.

- **Exit Option:** Award of UG Honors Degree in major and minor with 176 credits.

B.Sc. Physics (Honours / Honours with Research)

A Four Year eight semester Under Graduate Degree Program

1. Introduction to B.Sc. (Honours / Honours with Research) Physics

The National Education Policy (NEP) 2020 emphasizes multidisciplinary education, flexibility in learning, skill development, and research orientation. The Choice Based Credit System (CBCS) and Learning Outcome-based Curriculum Framework (LOCF) provide students with opportunities to choose courses from a curriculum comprising Major, Minor, Multidisciplinary, Skill Enhancement, Ability Enhancement, Value Added, and Research components. The framework ensures that students acquire a strong foundation in Physics while allowing flexibility to explore interdisciplinary areas and emerging technologies. It enables students to focus on clearly defined learning outcomes and make informed choices regarding higher education, research, entrepreneurship, and employment opportunities.

Programme Duration and Design:

The B.Sc. (Honours / Honours with Research) Physics programme is a four-year undergraduate degree programme spread over eight semesters. The curriculum is designed to impart both theoretical knowledge and practical skills in various branches of Physics. The teaching-learning process is student-centric and includes lectures, tutorials, laboratory work, seminars, assignments, group discussions, project-based learning, field visits, industrial visits, and research activities. In addition to conventional classroom teaching, ICT-enabled tools, simulations, virtual laboratories, audio-visual aids, and computational techniques will be used wherever feasible. Students will be encouraged to undertake internships, short-term projects, and research-oriented activities.

Assessment shall be based on Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). Each theory paper as well as practical paper of 2 Credits will be of 50 marks [CIE (20) + SEE (30) = Total (50)]. **Minimum passing in each head (i.e. CIE, SEE and Total) will be 40% of maximum marks.**

2. Learning Outcome-based Curriculum Framework in B.Sc. (Hons. / Res.) Physics

The Learning Outcome-based Curriculum Framework (LOCF) for the B.Sc. (Honours / Honours with Research) degree in Physics provides a comprehensive academic framework that accommodates contemporary developments in Physics while maintaining flexibility for future advancements. The framework emphasizes conceptual understanding, analytical thinking, experimental competence, computational skills, and research aptitude. It also facilitates mobility of

students across institutions and promotes interdisciplinary learning in accordance with the vision of NEP-2020.

Nature and Extent: The B.Sc. (Honours / Honours with Research) Physics programme encompasses a broad spectrum of theoretical, experimental, computational, and applied areas of Physics. In addition, the interdisciplinary and skill-oriented courses further enhance the scope of learning.

Aims of the Programme: The programme aims to develop a strong foundation in the fundamental principles of Physics and their applications. The core courses provide conceptual understanding and analytical skills, while elective, multidisciplinary, and skill enhancement courses help students explore specialized areas according to their interests and career aspirations. The programme also aims to foster scientific temper, research aptitude, innovation, ethical values, and lifelong learning skills.

3. Programme Specific Outcomes (PSOs) in B.Sc. (Hons. / Res.) Physics

The B.Sc. (Honours / Honours with Research) programme in Physics is designed to develop a comprehensive understanding of physical laws and phenomena through theoretical study, laboratory experiments, computational techniques, and research activities. The programme equips students with scientific knowledge, practical skills, and transferable competencies required for higher education, research, industry, and other professional pursuits.

- a. Knowledge Width and Depth:** Students acquire a thorough understanding of the fundamental concepts, principles, theories, and applications of Physics. The programme covers major branches of Physics including Mechanics, Waves and Oscillations, Electricity and Magnetism, Optics, Thermal Physics, Electronics, Quantum Physics, Nuclear Physics, Solid State Physics, Electromagnetic Theory, and Computational Physics. Depth of knowledge is achieved through advanced courses and research-oriented learning, while breadth is enhanced through elective and multidisciplinary courses.
- b. Laboratory Skills:** A significant outcome of the programme is the development of experimental and analytical skills through extensive laboratory training. Students learn scientific measurement techniques, data analysis, error estimation, interpretation of results, and operation of laboratory instruments. Practical exposure prepares students for careers in scientific laboratories, research institutions, industries, instrumentation centres, and technology-based sectors.

- c. Communication:** Effective communication is an essential component of scientific education. The programme provides opportunities to develop scientific writing, technical reporting, oral presentation, poster presentation, and documentation skills through laboratory reports, seminars, projects, and research assignments. Students learn to communicate scientific ideas clearly and logically to both scientific and non-scientific audiences.
- d. Capacity Enhancement:** The programme nurtures critical thinking, creativity, independent learning, and collaborative working abilities. Through projects, laboratory work, group activities, and research assignments, students develop leadership qualities, problem-solving abilities, decision-making skills, and adaptability to changing scientific and technological environments.
- e. Portable Skills:** The programme develops a range of transferable skills that are valuable across various professions and disciplines. These include quantitative reasoning, mathematical modelling, computational skills, data analysis, information retrieval, digital literacy, organizational ability, teamwork, and scientific problem-solving. Such skills enhance employability and support lifelong learning.

4. Structure of the Programme in B.Sc. (Hons. / Res.) Physics

The programme consists of Major (Discipline Specific) Courses, Minor Courses, Multidisciplinary Courses, Skill Enhancement Courses, Ability Enhancement Courses, Value Added Courses, Internship/Field Projects, and Research Projects as envisaged under NEP-2020.

The Major Courses provide a strong foundation in core areas of Physics and are compulsory for all students. Students are also offered opportunities to choose courses from Minor and Multidisciplinary baskets to broaden their academic exposure. Skill Enhancement Courses focus on practical, technical, computational, and employability skills, while Ability Enhancement and Value-Added Courses contribute to personality development, communication skills, environmental awareness, ethics, and social responsibility.

Internships, field-based projects, laboratory-based projects, and research projects form an integral component of the curriculum. Students opting for the Honours with Research pathway in the fourth year undertake a research project/dissertation under faculty supervision, enabling them to acquire research methodology, scientific investigation skills, data analysis techniques, and scientific writing abilities.

Basket for Minor Category Courses (Physics)

Semester	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
III	Minor	BPH3MN03T	Wave Optics and Electromagnetic Waves (Theory)	2	2	20	30	50
	Minor	BPH3MN03P	Wave Optics and Electromagnetic Waves (Practical)	2	4	20	30	50
IV	Minor	BPH4MN04T	Lasers and Optical Fibres (Practical)	2	2	20	30	50
	Minor	BPH4MN04P	Lasers and Optical Fibres (Practical)	2	4	20	30	50
V	Minor	BPH5MN05T	Electronic Devices and Circuits (Theory)	2	2	20	30	50

Basket for Skill Enhancement Courses (SEC) Category Courses (Physics)

Semester	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
I	SEC	BPH1SEC01P	Electric Wiring for Domestic Applications (Practical)	2	4	20	30	50
II	SEC	BPH2SEC02P	Fundamentals of Data Analysis and Data Interpretation (Practical)	2	4	20	30	50
IV	SEC	BCH4SEC03P	Advanced Experimentation (Practical)	2	4	20	30	50

Basket for Vocational and Skill Courses (VSC) Category Courses (Physics)

Semester	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
III	VSC	BPH3VSC01P	Electronic and Electrical Components (Practical)	2	4	20	30	50
IV	VSC	BPH4VSC02P	Regulated Power Supply (Practical)	2	4	20	30	50
V	VSC	BCH5VSC03P	Optical Instruments (Practical)	2	4	20	30	50
VI	VSC	BPH6VSC04P	Installation of Rooftop Solar Systems (Practical)	2	4	20	30	50

Basket for ELECTIVE (DSE) Category Courses (Physics)

Semester	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
V	DSE	BPH5DSE01AT	A. Digital Electronics and Microprocessors (Theory) OR	2	2	20	30	50
		BPH5DSE01BT	B. Optoelectronics and Devices (Theory)					
	DSE	BPH5DSE01P	A. Digital Electronics and Microprocessors (Practical) OR	2	4	20	30	50
			B. Optoelectronics and Devices (Practical)					
VI	DSE	BPH6DSE02AT	A. Analogue and Communication Electronics (Theory) OR	2	2	20	30	50
		BPH6DSE02BT	B. Astrophysics and Special Theory of Relativity (Theory)					
	DSE	BPH6DSE02P	A. Analogue and Communication Electronics (Practical) OR	2	4	20	30	50
			B. Astrophysics and Special Theory of Relativity (Practical)					
VII (Honors)	DSE	BPH7DSE03AT	A. Experimental Techniques in Physics (Theory) OR	2	2	20	30	50
		BPH7DSE03BT	B. Sources of Energy and Energy Storage Devices (Theory)					
	DSE	BPH7DSE03P	A. Experimental Techniques in Physics (Practical) OR	2	4	20	30	50
			B. Sources of Energy and Energy Storage Devices (Practical)					
VIII (Honors)	DSE	BPH8DSE04AT	A. Biophysics and Biodevices (Theory) OR	2	2	20	30	50
		BPH8DSE04BT	B. Nanomaterials and Properties (Theory)					
	DSE	BPH8DSE04P	A. Biophysics and Biodevices (Practical) OR	2	4	20	30	50
			B. Nanomaterials and Properties (Practical)					

Semester	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
VII (Honors with Research)	DSE	BCH7DSE03AT	A. Experimental Techniques in Physics (Theory) OR	2	2	20	30	50
		BCH7DSE03BT	B. Sources of Energy and Energy Storage Devices (Theory)					
	DSE	BCH7DSE03P	A. Experimental Techniques in Physics (Practical) OR	2	4	20	30	50
			B. Sources of Energy and Energy Storage Devices (Practical)					
VIII (Honors with Research)	DSE	BPH8DSE04AT	A. Biophysics and Biodevices (Theory) OR	2	2	20	30	50
		BPH8DSE04BT	B. Nanomaterials and Properties (Theory)					
	DSE	BPH8DSE04P	A. Biophysics and Biodevices (Practical) OR	2	4	20	30	50
			B. Nanomaterials and Properties (Practical)					

Basket for Generic/Open Elective (GE/OE) Category Courses (Physics)

(For the students of Faculties other than Science and Technology)

Semester	Course Category	Course Code	Name of Course	Credits	Teaching Scheme (Hrs./Week)	Evaluation Scheme and Max Marks*		
						CIE	SEE	Total
I	GE/OE	BPH1GOE01T	Physics of Sports (Theory)	2	2	20	30	50
II	GE/OE	BPH2GOE02T	Physics in Daily Life (Theory)	2	2	20	30	50
III	GE/OE	BPH3GOE03T	Astronomy and the Universe (Theory)	2	2	20	30	50
IV	GE/OE	BPH4GOE04T	Physics of Sound and Music (Theory)	2	2	20	30	50

B. Sc. Semester-I			
Discipline Specific Core Course (DSC)-PHYSICS - Paper-I (BPH1DSC01T)			
(Measurements, Mechanics, and Properties of Matter)			
DSC-1 THEORY	Hours: 02 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
UNIT-I			
Measurements	Need of measurement; Physical quantities with their units. Least count, accuracy, and precision of measuring instruments. Significant figures. Errors in measurement. Dimensions of Physical quantities and analysis.		8 Hrs
UNIT II			
Newtonian Mechanics	Newton's laws of motion; inertial and non-inertial frames of reference; pseudo forces. Law of conservation of linear and angular momentum and their applications. Elastic and inelastic collisions in one dimension. Centripetal and centrifugal forces and their applications.		7 Hrs
UNIT-III			
Elasticity	Elastic behaviour of solids, Stress-strain relationship, Hooke's Law. Young's modulus, bulk modulus, modulus of rigidity, relation between elastic constants and Poisson's ratio. elastic energy stored in a stretched wire. Cantilevers and bending of beam		7 Hrs
UNIT-IV			
Fluid Mechanics and Surface Properties	Ideal and real fluids; streamline and turbulent flow. Equation of continuity. Reynolds number and critical velocity. Viscosity, coefficient of viscosity, Newton's law of viscosity, Stokes' law and terminal velocity. Bernoulli's principle and its applications (atomizer and carburettor in brief). Surface Tension.		8 Hrs

Text Books/ Reference Books:

1. Mechanics by D.S. Mathur, S. Chand, and Company.
2. Fundamentals of Physics. 12th Edition (2023) by D. Halliday, R. Resnick and J. Walker, Wiley and Sons, New York.
3. Feynman Lectures on Physics (Volumes 1,2,3) by Feynman, Leighton and Sands.
4. Theory of elasticity by Stephen P. Timoshenko and J. N. Goodier, McGraw-Hill Education (India) Private Limited.
5. Handbook of Measurement Error Models, Edited by Grace Y. Yi, Aurore Delaigle, Paul Gustafson, 2021, published by Chapman & Hall.
6. Physics for Degree Students B.Sc. First Year, by C L Arora & Dr. P S Hemne, S. Chand and Company.

B. Sc. Semester-I Discipline Specific Core Course (DSC)-PHYSICS - Practical-I (BPH1DSC01P) (Measurements, Mechanics, and Properties of Matter)			
DSC-1 Practical	Hours: 04 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
List of Experiments (Each student will have to perform at least 10 practical in semester) 1) Range, least count and measurement using various instruments (Vernier Calliper, Screw Gauge, Travelling Microscope, Spectrometer, etc.). 2) To determine modulus of rigidity (η) of a material of wire by Maxwell's needle. 3) To determine modulus of rigidity (η) of a material of wire by torsional pendulum. 4) To determine Young's Modulus (Y) of a wire material by method of vibrations. 5) To find the Young's Modulus (Y) of a material by method of bending of beam. 6) Young's modulus (Y) by cantilever. 7) To determine the moment of inertia of a fly-wheel. 8) To determine Coefficient of Viscosity (η) of a given liquid by Poiseuille's Method. 9) To find the surface tension by capillary rise method. 10) Determination of surface tension of mercury. 11) To determine the surface tension of a liquid by Jaeger's method. 12) Determine the viscosity of liquid by Stokes' method.			

Course Outcomes

After completion of this course, students will be able to:

Sr. No.	Course outcome
1.	Understand the physical quantities and their units and use precision instruments correctly while identifying their least counts and measurement limits.
2.	Analyse the laws of motion and conservation of linear and angular momentum for different situations.
3.	Evaluate the elastic properties of materials and the inter-relationships between elastic constants.
4.	Explain the mechanics of fluids and surface phenomena.

B. Sc. Semester-I Skill Enhancement Course (SEC) – PHYSICS – Practical - I (BPH1SEC01P) (Electric Wiring for Domestic Applications)			
SEC-1 Practical	Hours: 04 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
List of Experiments (Each student will have to perform at least 10 practical in semester) 1) To study the various safety tools, equipment, symbols and precautions for practicing electric wiring. 2) To study the various electrical wiring accessories (one-way switches, two-way switches, bell switches, sockets, power plug, indicators, speed regulator, fuses, MCBs, energy meter, PVC pipe, Casing-Capping, colour coding for line, neutral and earth wires). 3) To study the various tools, use for wiring (combination plier, nose plier, cutter, screw driver, star screw driver, hammer, mallet, hacksaw, files, line tester, measuring tap, drill machine, grinder, level, safety gloves). 4) Identify various types of wiring and different electrical accessories. 5) To study of various domestic energy consuming appliances and calculate electric energy consumption. 6) To study and design test board/test lamp (200W lamp). 7) To study and identify line, neutral and earth wire by using test lamp. 8) To study and Measurement of A.C, D.C voltage and current by respective voltmeters and ammeters. 9) Prepare extension board. 10) To prepare wiring for a fluorescent tube light with a switch control. 11) To draw and wire up to control speed of fan by using speed regulator. 12) Install and wire an electric water heater with power plug (16 A /32 A). 13) To draw and wire up for Connecting lamps in series, parallel and series-parallel circuits 14) To Wire up PVC conduit wiring to control one lamp from 2 different places (stair case wiring). 15) Wire up PVC conduit wiring to control one lamp from 3 different places (godown wiring). 16) Draw layouts and practice in PVC casing – capping wiring with minimum two points (fan & lamp). 17) Draw layouts and practice in PVC conduit open wiring with minimum two points (fan & lamp). 18) Wire up PVC Conduit wiring and practice control of a socket, a Lamp, a fan from a single board using single way switches. 19) To study and verify KVL and KCL in series and parallel circuits. 20) To demonstrate and draw electrical supply system from pole to switch board through energy meter. 21) To measure Energy consumed in a single-phase circuit using Energy meter. 22) Prepare and mount the energy meter board with MCB. 23) Draw and wire up the consumers main board with ICDP switch and distribution fuse box.			

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| <p>24) Prepare pipe earthing and measure earth resistance by earth tester/megger.</p> <p>25) Prepare plate earthing and measure earth resistance by earth tester/megger.</p> |
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Reference Books / Links:

1. Principles of Electronics by V. K. Mehta, S. Chand and Co. Ltd.
2. Electrical Engineering and Electronics by B.L. Theraja, S. Chand and Co. Ltd.
3. Electronic circuits: Handbook of design and applications by U. Tietze, Ch. Schenk, Springer Berlin Heidelberg.
4. Household Electricity and Appliances by S C Bhargava, BS Publications.
5. Electrical Wiring Residential by Phil Simmons, Ray Mullin, Cengage Learning.
6. Textbook of Electric Wiring by S. Samaddar, New Central Book Agency (P) Ltd.
7. Textbook of Electrical Design Estimating and Costing by Surjit Singh, Dhanpat Rai & Company (P) Limited.
8. Electric Wiring for Domestic Installers by Brian Scaddan, Taylor & Francis.
9. Electrical Wiring: An Introduction by Satheesh Kumar, ANE Books Pvt. Ltd.
10. Electrical Home Appliances with Electric Wiring by S. Kumar Jain, Amit Aggarwal, Bhartiya Technical Publications (India).
11. Modern Basic Electrical & House Wiring Servicing by M Lotia, BPB Publications.
12. Basic Electricity & Practical Wiring by Thomas Hoerner, Hobar Publications.

Course Outcomes

After completion of this course, students will be able to:

Sr. No.	Course outcome
1.	Describe basic safety rules in own words.
2.	Identify the line, neutral and earth wire by using test lamp.
3.	Calculate electric energy consumption by domestic appliances.
4.	Perform to control lamp, fan by switches.
5.	Differentiate between PVC Conduits and Casing-Capping wirings.
6.	Apply the practical knowledge in conducting various practical during graduation.
7.	Compare the rating of switches as per appliances.
8.	Evaluate estimate cost for electric wiring.
9.	Design a test lamp and extension board.

FYUGP Semester-I Generic / Open Elective (GE/OE) Course - (BPH1GOE01T) (Physics of Sports) (For the students of Faculties other than Science and Technology)			
GE/OE-1 THEORY	Hours: 02 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
UNIT-I			
Mechanics and Motion in Sports	Speed, velocity and acceleration in sports activities; Newton’s laws of motion and their applications in running, jumping, throwing and kicking; force, momentum and impulse in games (cricket and football); work, energy and power in athletic performance		8 Hrs
UNIT II			
Friction, Collision & Projectile motion in Sports	Friction and its role in sports (running, cycling and skating); collisions and impact in sports activities; elastic and inelastic collisions (cricket, carrom and snooker); Projectile motion in basketball, football, cricket and javelin throw;		7 Hrs
UNIT-III			
Rotational Motion in Sports	Centre of mass and equilibrium of the human body (gymnastics and cycling), rotational motion and angular momentum in gymnastics, diving, cycling and spinning balls.		7 Hrs
UNIT-IV			
Fluid Physics and Aerodynamics in Sports	Air resistance and drag in cycling and badminton; Magnus effect and swing/spin in cricket ball motion; buoyancy and fluid resistance in swimming;		8 Hrs

Text Books/ Reference Books:

1. Concepts of Physics Vol. I & II by H. C. Verma, Bharati Bhawan Publishers.
2. A Textbook of Applied Physics by R. K. Gaur and S. L. Gupta, Dhanpat Rai Publications.
3. Fundamentals of Physics. 12th Edition (2023) by D. Halliday, R. Resnick and J. Walker, Wiley and Sons, New York.
4. Sports Biomechanics: The Basics by Anthony J. Blazeovich, Bloomsbury Publishing (Indian Edition).
5. Biophysics in Sports by N.K. Sharma, Khel Sahitya Kendra.
6. Mechanics by B.B. Laud, New Age International Publishers.

Course Outcomes

After completion of this course, students will be able to:

Sr. No.	Course outcome
1.	Understand the application of mechanics and motion in sports activities and athletic performance.
2.	Explain the role of friction, collisions, and projectile motion in various games and sports.
3.	Analyse balance, rotational motion, and angular momentum in sports movements and techniques.
4.	Describe the effects of aerodynamics, drag, buoyancy, and spin in sports performance.

B. Sc. Semester-II Discipline Specific Core Course (DSC) - PHYSICS - Paper-II (BPH2DSC02T) (Semiconductor Physics and devices)			
DSC-2 THEORY	Hours: 02 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
UNIT-I			
Fundamentals of Semiconductor Physics	Fundamentals of Semiconductors, Types of semiconductors (Intrinsic and Extrinsic semiconductors), Concept of electrons and holes as charge carriers, Doping and impurity atoms, P-type and N-type semiconductors, Majority and minority carriers. Temperature dependence of semiconductor conductivity.		8 Hrs
UNIT II			
Semiconductor Junctions and Diodes	P-N junction, Depletion region and barrier potential, Biasing of P-N junction diode. Types of P-N junction diodes and its application, Zener diode and its voltage regulation application. Light Emitting Diode (LED), Photodiode. Photovoltaic effect, Solar cell: Principle and working, Semiconductor sensors (basic idea),		7 Hrs
UNIT-III			
Bipolar Transistors	Bipolar Junction Transistor (BJT) and its types. Principle, Construction and Working of BJT. Transistor configurations (CB, CE, and CC modes), Input and Output characteristics of the CE and CB configurations. application of BJT as amplifier and switch (Qualitative). Leakage current and thermal runaway.		8 Hrs
UNIT-IV			
Field Effect Transistors	Field Effect Transistor (FET) and Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET): Principle, Construction and Working. Characteristics of FET and MOSFET. Applications of FET and MOSFET.		7 Hrs

Text Books/ Reference Books:

1. Solid State Physics by S.O. Pillai, New Age International Publishers.
2. Principles of Electronics by V.K. Mehta and Rohit Mehta, S. Chand Publications.
3. Basic Electronics by B.L. Theraja and A.K. Theraja, S. Chand Publications.
4. Electronic Principles by Albert Malvino and David Bates, McGraw Hill Education.
5. Electronic Devices by Thomas L. Floyd, Pearson Education.
6. Semiconductor Physics and Devices by Donald A. Neamen, McGraw Hill Education.
7. Hand Book of Electronics by Gupta and Kumar, Pragati Prakashan.
8. Solid State Electronic Devices by Ben G. Streetman and Sanjay Banerjee, Pearson Education.
9. Electronic Devices and Circuit Theory by Robert L. Boylestad and Louis Nashelsky, Pearson Education.

B. Sc. Semester-II Discipline Specific Core Course (DSC)-PHYSICS – Practical-II (BPH2DSC02P) (Semiconductor Physics and devices)			
DSC-2 Practical	Hours: 04 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
List of Experiments (Each student will have to perform at least 10 practical in semester) 1) Identification and testing the working condition of electronic components and semiconductor devices. 2) Identification of emitter, base and collector of given transistor. 3) Identification of types (NPN / PNP) of given transistor. 4) Study of I-V characteristics of P-N junction diode in forward and reverse bias. 5) Construction and testing of a half-wave rectifier. 6) Construction and testing of a full-wave rectifier. 7) Study of I-V characteristics of a Zener diode. 8) Study of voltage regulation using Zener diode (line regulation only). 9) Study of I-V characteristics of LED. 10) Measurement of LED knee voltages for different wavelengths. 11) Study of photodiode response under different light conditions. 12) Study of solar cell output voltage under different illumination conditions. 13) Verification of transistor action using simple circuits. 14) Transistor as a switch for LED operation. 15) Study of series and parallel combination of solar cells.			

Course Outcomes

After completion of this course, students will be able to:

Sr. No.	Course outcome
1.	Explain the fundamental physics of semiconductors, including carrier transport and energy band structures.
2.	Describe the formation and working of p-n junction diode and its applications.
3.	Understand the basic operation of transistors and their use as amplifier and switch.
4.	Identify and differentiate between various modern devices like FETs, LEDs, and Solar Cells based on their functional requirements.
5.	Perform simple experiments related to semiconductor devices and interpret their characteristics qualitatively.

B. Sc. Semester-II Skill Enhancement Course (SEC) - PHYSICS – Practical - II (BPH2SEC02P) (Fundamentals of Data Analysis and Data Interpretation)			
SEC-2 Practical	Hours: 04 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
List of Experiments (Each student will have to perform at least 10 practical in semester) 1) Creation of Google form to acquire data in Excel spreadsheet and to reshuffle / delete the columns / rows as per requirements. 2) To sort and filter data and find maximum, minimum, average, sum of range of numbers (set of 100 data points) 3) Using Microsoft Excel spreadsheet draw the frequency distribution table for the given data (data set should contain minimum 100 data points) 4) Using Microsoft Excel spreadsheet plot bar graph for the data collected from 100 students of your college (for example conduct a survey on the favourite sport among 5 – 6 different sports). 5) Using Microsoft Excel spreadsheet plot bar chart for the data collected from 100 students (for example, conduct a survey on the height/weight ratio with respect to their ages) in your college. 6) Using Microsoft Excel spreadsheet draw frequency polygon and frequency curve for the data collected from 100 students (for example, marks obtained by the students in Xth class in 5 subjects – namely Maths, Science, Marathi, English and Social Studies) 7) Using Microsoft Excel spreadsheet draw a Line graph for the given data (for example – using a set of 12 data points draw a V-I graph for a pure resistance). Report the slope and intercept. 8) Using Microsoft Excel spreadsheet draw a graph for the given (nonlinear) data (e.g. using a set of 12 data points draw a V-I graph for a diode). 9) Using Microsoft Excel spreadsheet find the mean, mode and median for the given data and also represent them in histogram 10) Perform different arithmetic operations using Microsoft Excel spreadsheet. 11) Obtained the trend and analyse the given data using Microsoft Excel spreadsheet. 12) Draw the scatterplot of the given data and analyse it using Microsoft Excel spreadsheet.			

Reference Books / Links:

1. Fundamentals of Applied Statistics by S. C. Gupta and V. K. Kapoor, S. Chand & Sons.
2. Statistics for Management by Richard I. Levin and David S. Rubin, Pearson Education.
3. Business Statistics for Contemporary Decision Making by Ken Black, Wiley India.
4. Statistical Methods by N. G. Das, McGraw Hill Education India.
5. Business Statistics Using Excel by Glyn Davis and Branko Pecar, Oxford University Press.
6. Statistical Analysis: Microsoft Excel 365 by Conrad George Carlberg, Pearson Education.
7. Microsoft Excel Data Analysis and Business Modeling by Wayne L. Winston, PHI Learning.
8. Excel Data Analysis by Paul McFedries, Wiley India.

Course Outcomes

After completion of this course, students will be able to:

Sr. No.	Course outcome
1.	Collect a big data as per requirements and automatically get it in spreadsheet for further processing.
2.	Navigate on the spread sheet to edit text and values by inserting and deleting the ranges.
3.	Use various charts and formatting tables with row and column formatting.
4.	Use various mathematical functions to explore the necessary interpretations.
5.	Use various statistical functions to explore the necessary interpretations.
6.	Perform line / curve fitting for analysis.

FYUGP Semester-II			
Generic / Open Elective (GE/OE) Course - (BPH2GOE02T)			
(Physics in Daily Life)			
(For the students of Faculties other than Science and Technology)			
GE/OE-2 THEORY	Hours: 02 Hours / Week	Maximum Marks: (CIE + SEE = Total) 20 + 30 = 50	Credit 02
UNIT-I			
Physics of Earth Atmosphere	Structure and composition of the Earth's atmosphere; atmospheric pressure and its variation with altitude; formation of clouds, rain, wind and storms; greenhouse effect and global warming; ozone layer and its importance; lightning, thunder and rainbow formation;		7 Hrs
UNIT II			
Physics in the Human Body	Blood flow and fluid dynamics in the circulatory system Physics of vision: optics of the eye, Acoustics of the human ear and sound perception Thermoregulation and heat transfer in the human body.		7 Hrs
UNIT-III			
Heat and Sound Applications in Daily Life	Temperature and heat, Thermometer; methods of heat transfer with applications in cooking utensils, geysers, thermos flasks and refrigerators, sound and its characteristics; echoes and noise pollution; working principles and microphones, loudspeakers.		8 Hrs
UNIT-IV			
Electric Applications in Daily Life	Electric current and voltage, working principles of electric bulbs, LED lights, heaters, fans, mixers, electric motors, microwave oven and induction cooktop; electrical safety and earthing; Batteries, inverters and solar panels;		8 Hrs

Text Books/ Reference Books:

1. Concepts of Physics Vol. I & II by H. C. Verma, Bharati Bhawan Publishers.
2. A Textbook of Applied Physics by R. K. Gaur and S. L. Gupta, Dhanpat Rai Publications.
3. Fundamentals of Physics. 12th Edition (2023) by D. Halliday, R. Resnick and J. Walker, Wiley and Sons, New York.
4. How Things Work: The Physics of Everyday Life by Louis A. Bloomfield, Wiley.
5. The Flying Circus of Physics by Jearl Walker, Wiley.
6. General Physics by R.N. Chaudhuri, New Age International Publishers.

Course Outcomes

After completion of this course, students will be able to:

Sr. No.	Course outcome
1.	Understand the physical processes related to the Earth's atmosphere.
2.	Explain the basic principles of physics involved in the human body.
3.	Apply concepts of heat transfer and sound in analysing the working of common household devices.
4.	Describe the principles and safe usage of common house hold electrical appliances.

Question Paper Pattern for Semester End Examination (SEE)

Time:- 3 Hrs.]

[Max. Marks:- 30

- Note:-**
1. All questions are compulsory.
 2. All questions carry equal marks.
 3. Use of Calculator is permitted.
 4. Draw labelled diagrams wherever necessary.
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1.	EITHER		
	A]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – I)	3/4 2 1
	OR		
	B]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – I)	3/4 2 1

2.	EITHER		
	A]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – II)	3/4 2 1
	OR		
	B]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – II)	3/4 2 1

3.	EITHER		
	A]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – III)	3/4 2 1
	OR		
	B]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – III)	3/4 2 1

4.	EITHER		
	A]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – IV)	3/4 2 1
	OR		
	B]	i) Theory question ii) Theory/ Numerical question iii) Numerical / Theory question (All from Unit – IV)	3/4 2 1

5.	Solve any SIX		1 x 6 = 6
	A]	Theory question From Unit – I	
	B]	Numerical From Unit – I	
	C]	Theory question From Unit – II	
	D]	Numerical From Unit – II	
	E]	Theory question From Unit – III	
	F]	Numerical From Unit – III	
	G]	Theory question From Unit – IV	
	H]	Numerical From Unit – IV	