SANKALCHAND PATEL UNIVERSITY

VISNAGAR

Faculty of Science and Humanities

Structure, Teaching Scheme and Syllabus of

Bachelor of Science (Physics)

Program Code: SC105

With effect from: 2023-24

Graduate attributes (Generic learning outcomes)

Program Out Comes:

PO1: ***Complex problem-solving:*** The graduates should be able to demonstrate the capability to solve different kinds of problems in familiar and non-familiar contexts and apply the learning to real-life situations.

PO2: ***Critical thinking:*** The graduates should be able to demonstrate the capability to:

- apply analytic thought to a body of knowledge, including the analysis and evaluation of policies, and practices, as well as evidence, arguments, claims, beliefs, and the reliability and relevance of evidence,
- identify relevant assumptions or implications; and formulate coherent arguments,
- identify logical flaws and holes in the arguments of others,
- analyze and synthesize data from a variety of sources and draw valid conclusions and support them with evidence and examples.

PO3: ***Creativity***: The graduates should be able to demonstrate the ability to:

- create, perform, or think in different and diverse ways about the same objects or scenarios,
- deal with problems and situations that do not have simple solutions,
- innovate and perform tasks in a better manner,
- view a problem or a situation from multiple perspectives,
- think 'out of the box' and generate solutions to complex problems in unfamiliar contexts,
- adopt innovative, imaginative, lateral thinking, interpersonal skills and emotional intelligence.

PO4: ***Communication Skills:*** The graduates should be able to demonstrate the skills that enable them to:

- listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/audiences,
- express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media,
- confidently share views and express herself/himself,
- construct logical arguments using correct technical language related to a field of learning, work/vocation, or an area of professional practice, and convey ideas, thoughts, and arguments using language that is respectful and sensitive to gender and other minority groups.

PO5: ***Analytical reasoning/thinking:*** The graduates should be able to demonstrate the capability to:

- evaluate the reliability and relevance of evidence;
- identify logical flaws in the arguments of others;
- analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and address opposing viewpoints.

PO6: ***Research-related skills***: The graduates should be able to demonstrate:

- a keen sense of observation, inquiry, and capability for asking relevant/ appropriate questions,
- the ability to problematize, synthesize, and articulate issues and design research proposals,
- the ability to define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships,
- the capacity to develop appropriate methodology and tools for data collection,
- the appropriate use of statistical and other analytical tools and techniques,
- the ability to plan, execute and report the results of an experiment or investigation,

PO7: ***Coordinating/collaborating with others***: The graduates should be able to demonstrate the ability to:

- work effectively and respectfully with diverse teams,
- facilitate cooperative or coordinated effort on the part of a group,
- act together as a group or a team in the interests of a common cause and work efficiently as a member of a team.

PO8: ***Leadership readiness/qualities:*** The graduates should be able to demonstrate the capability for:

- mapping out the tasks of a team or an organization and setting direction.
- formulating an inspiring vision and building a team that can help achieve the vision, motivating and inspiring team members to engage with that vision.
- using management skills to guide people to the right destination.

PO9: ***'Learning how to learn skills:*** The graduates should be able to demonstrate the ability to:

- acquire new knowledge and skills, including 'learning how to learn skills, that are necessary for pursuing learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social, and cultural objectives, and adapting to changing trades and demands of the workplace, including adapting to the changes in work processes in the context of the fourth industrial revolution, through knowledge/ skill development/reskilling,
- work independently, identify appropriate resources required for further learning,
- acquire organizational skills and time management to set self-defined goals and targets with timelines.
- inculcate a healthy attitude to be a lifelong learner

PO10: ***Digital and technological skills:*** The graduates should 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

PO11: ***Multicultural competence and inclusive spirit:*** The graduates should be able to demonstrate:

- the acquisition of knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity,
- capability to effectively engage in a multicultural group/society and interact respectfully with diverse groups,
- capability to lead a diverse team to accomplish common group tasks and goals.
- gender sensitivity and adopting a gender-neutral approach, as also empathy for the less advantaged and the differently-abled including those with learning disabilities.

PO12: ***Value inculcation:*** The graduates should be able to demonstrate the acquisition of knowledge and attitude that are required to:

- embrace and practice constitutional, humanistic, ethical, and moral values in life, including universal human values of truth, righteous conduct, peace, love, nonviolence, scientific temper, citizenship values,
- practice responsible global citizenship required for responding to contemporary global challenges, enabling learners to become aware of and understand global issues and to become active promoters of more peaceful, tolerant, inclusive, secure, and sustainable societies,
- formulate a position/argument about an ethical issue from multiple perspectives
- identify ethical issues related to work, and follow ethical practices, including avoiding unethical behavior such as fabrication, falsification or misrepresentation of data, or committing plagiarism, and adhering to intellectual property rights,
- recognize environmental and sustainability issues, and participate in actions to promote sustainable development.
- adopt an objective, unbiased, and truthful actions in all aspects of work,
- instill integrity and identify ethical issues related to work, and follow ethical practices.

PO13: ***Autonomy***, **responsibility, and accountability:** The graduates should be able to demonstrate the ability to:

- apply knowledge, understanding, and/or skills with an appropriate degree of independence relevant to the level of the qualification,
- work independently, identify appropriate resources required for a project, and manage a project through to completion,
- exercise responsibility and demonstrate accountability in applying knowledge and/or skills in work and/or learning contexts appropriate for the level of the qualification, including ensuring safety and security at workplaces.

PO14: ***Environmental awareness and action:*** The graduates should be able to demonstrate and required to take appropriate actions for:

- mitigating the effects of environmental degradation, climate change, and pollution
- effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living.

PO15: ***Community engagement and service:*** The graduates should be able to demonstrate the capability to participate in community-engaged services/ activities for promoting the well-being of society.

PO16: ***Empathy:*** The graduates should be able to demonstrate the ability to identify with or understand the perspective, experiences, or points of view of another individual or group, and to identify and understand other people's emotions.

Program Specification Out Comes:

PSO-1: To apply the advanced level knowledge in field of basic physics, electronics, optics, materials science, Instrumentation, solid state physics, computational methods, heat ad thermodynamics, experimental physics, nuclear and particle physics, plasma and fusion reactor, nuclear accelerator and radiation physics together with their applications in solving complex scientific problems in classical mechanics, Quantum mechanics and general theory of relativity.

PSO-2: To apply the advanced level knowledge in field of electronics particularly optical fiber communication, Transmission Lines and Wave Guides, optoelectronics, analog & digital electronics and microprocessor together with their applications in interdisciplinary areas of science.

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. (Physics) **With effect from: 2023-24**
Semester: I

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
11-PHM201-1C	Mechanics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
11-PHM202-1C	Electricity, Magnetism and EMT	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
11-BIE204-1C 11-CHE201-1C 11-MAE201-1C	Biodiversity **OR** Chemistry of organic compound-I **OR** Fundamental of Statistic	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
11-MDC238-1C 11-MDC222-1C 11-MDC221-1C 11-MDC223-1C	Introduction to Biology **OR** Matrix vector & differentiation **OR** Ultrastructure of cell **OR** Cyber Security-I	MD	4	3	-	2	5	18	50	09	25	-	-	09	25	100
11-AEC201-1C	Basic English-I	AEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
11-IKS101-1C	Yoga and Meditation	IKS	2	-	-	4	4	-	-	-	-	09	25	09	25	50
11-SEC201-1C 11-SEC202-1C 11-SEC203-1C 11-SEC204-1C	Tally Accounting **OR** Personality Development **OR** Laser & Fiber Optics **OR** Business Mathematics-I	SEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
	Total		**22**	**16**	**-**	**12**	**28**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. (Physics) **With effect from: 2023-24**
Semester: II

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
12-PHM203-1C	Thermal Physics and Quantum Mechanics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
12-PHM204-1C	Wave and Optics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
12-CHE202-1C 12-MAE202-1C	Chemistry of organic compound-II **OR** Basic of Statistics	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
12-MDC226-1C 12-MDC227-1C 12-MDC228-1C 12-MDC229-1C	Digital Marketing **OR** Cyber Security-II **OR** Partial differentiation & Complex Number **OR** Biochemistry & Cellular basis of life	MD	4	3	-	2	5	18	50	09	25	-	-	09	25	100
12-AEC202-1C	Basic English-II	AEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
12-VAC101-1C	National service scheme	VAC	2	-	-	4	4	-	-	-	-	09	25	09	25	50
12-SEC206-1C 12-SEC207-1C 12-SEC208-1C 12-SEC209-1C	Instrumentation Measurement & Analysis **OR** Chemistry of Cosmetics and Hygiene Products **OR** Biocomputing **OR** Business Mathematics-II	SEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
		Total	**22**	**16**	**-**	**12**	**28**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. (Physics) **With effect from: 2023-24**
Semester: III

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
13-PHM205-2C	Solid state physics & Quantum Mechanics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
13-PHM206-2C	Plasma Physics & Electronics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
13-PHM207-2C	Electronics-I	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
13-MDC232-2C 13-MDC233-2C	Vector space and inner product space Linear Transformation **OR** Reaction of Organic chemistry-III	MD	4	3	-	2	5	18	50	09	25	-	-	09	25	100
13-AEC203-2C	Grammar and Communication Skill-I	AEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
13-SEC210-2C 13-SEC211-2C 13-SEC212-2C	Vaccum Pump, Pressure Guages and Instruments **OR** Business Mathematics-III **OR** Green Chemistry	SEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
13-IKS102-2C	Vedic mathematics	IKS	2	-	-	4	4	-	-	-	-	09	25	09	25	50
		Total	**22**	**16**	**-**	**12**	**28**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. (Physics) **With effect from: 2023-24**
Semester: IV

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
14-PHM208-2C	Quantum, Classical and Mathematical Physics-I	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
14-PHM209-2C	Solid state and statistical mechanics-I	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
14-PHM210-2C	Nuclear Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
14-MAE203-2C 14-CHE203-2C	Abstract Algebra **OR** Chemistry of Organic compounds-III	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
14-AEC204-2C	Grammar and Communication Skill-II	AEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
14-SEC215-2C 14-SEC216-2C	Sound Engineering **OR** Business Mathematics-IV	SEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
14-VAC202-2C 14-VAC203-2C	Environmental Science **OR** Integrated Personality development course	VAC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
				-	-	4	4	-	-	-	-	9	25	9	25	
		Total	**22**	**18**	**-**	**12**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. (Physics) **With effect from: 2023-24**
Semester: V

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
15-PHM301-3C	Quantum, Classical and Mathematical Physics-II	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
15-PHM302-3C	Solid state and statistical mechanics-II	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
15-PHM303-3C	Electrodynamic-I	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
15-PHE301-3C 15-PHE301-3O	Electronics-II **OR** Atomic cohesion & Crystal binding	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
15-PHE302-3C 15-PHE302-3O	Analog and Digital Electronics-I **OR** Concept of Langrangian Mechanics	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
15-SEC301-3C 15-SEC302-3C	Experimental and Measurement Techniques **OR** Instruments	SEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
	Total		**22**	**17**		**10**	**27**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. (Physics) **With effect from: 2023-24**
Semester: VI

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical/Viva voce (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
16-PHM304-3C	Mathematical Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
16-PHM305-3C	Elements of Solid state Physics and Error Analysis	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
16-PHM306-3C	Atomic & Molecular Spectroscopy and Statistical Mechanics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
16-PHE303-3C OR 16-PHE303-3O	Analog and digital electronics-II **OR** Nano Physics	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
16-AEC301-3C	Advanced English	AEC	2	2	-	-	2	09	25	09	25	-	-	-	-	50
16-PHM307-3C	Internship	Internship	4	-	-	8	8	-	-	-	-	18	50	18	50	100
		Total	**22**	**14**	**-**	**16**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) (Honours) **Program Code: SC105**
Abbreviation Name: B.Sc. Honours (Physics) **With effect from: 2023-24**
Semester: VII

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical/ Viva Voce (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
17-PHM401-4C	Theoretical Condensed Matter Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHM402-4C	Classical and Quantum Mechanics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHM403-4C	Electrodynamics -II	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHE401-4C OR 17-PHE401-4O	Microwave communication: Electronic and Technology **OR** Bio Physics	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHM404-4C	On The Job Training	OJT	6	-	-	12	12	-	-	-	-	27	75	27	75	150
		Total	**22**	**12**	**-**	**20**	**32**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) (Honours with Research) **Program Code: SC105**
Abbreviation Name: B.Sc. Honours with Research (Physics) **With effect from: 2023-24**
Semester: VII

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical/ Viva Voce (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
17-PHM401-4C	Theoretical Condensed Matter Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHM402-4C	Classical and Quantum Mechanics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHM403-4C	Electrodynamics -II	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHE401-4C 17-PHE401-4O	Microwave communication: Electronic and Technology **OR** Bio Physics	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
17-PHM405-4C	Research Project	RP	6	-	-	12	12	-	-	-	-	27	75	27	75	150
		Total	**22**	**12**	**-**	**20**	**32**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) (Honours) **Program Code: SC105**
Abbreviation Name: B.Sc. Honours (Physics) **With effect from: 2023-24**
Semester: VIII

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical /Viva -voce (Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
18-PHM406-4C	Advanced Quantum Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHM407-4C	Nano Science and Thin Film	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHM408-4C	Elements Of Experimental Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHE402-4C 18-PHE402-4O	Microprocessors, Programming, Interfacing & Applications **Or** Absorption & Emission Spectroscopy	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHM409-4C	On The Job Training	OJT	6	-	-	12	12	-	-	-	-	27	75	27	75	150
		Total	**22**	**12**	**-**	**20**	**32**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Faculty of Science & Humanities

Program Name: Bachelor of Science (Physics) **Program Code: SC105**
Abbreviation Name: B.Sc. Honours with Research (Physics) **With effect from: 2023-24**
Semester: VIII

Course Code	Course Name	Type of Course	Credit	Hours per week				Theory (Marks)				Practical / Viva-Voce (Marks)				Total (Marks)
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
18-PHM406-4C	Advanced Quantum Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHM407-4C	Nano Science and Thin Film	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHM408-4C	Elements Of Experimental Physics	MJ	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHE402-4C 18-PHE402-4O	Microprocessors, Programming, Interfacing & Applications **Or** Absorption And Emission Spectroscopy	MN	4	3	-	2	5	18	50	09	25	-	-	09	25	100
18-PHM410-4C	Research Project	RP	6	0	-	12	12	-	-	-	-	27	75	27	75	150
Total			**22**	**12**	**-**	**20**	**32**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**550**

Note: if any

Multiple Entry & Exit Option

Sr. No.	Semester	Option	Certificate Name	Remarks
1	After First Year (semester -2)	Exit	UG Certificate in Physics	Student must earn 44Credits along with earn the 4 Credit - During Summer Vacation through Vocational Programs (8 weeks)
2	After Second Year (semester -4)	Exit	Under Graduate Diploma in Physics	Student must earn 88Credits along with earn the 4 Credit - During Summer Vacation through Vocational Programs (8 weeks)
3	After Third Year (semester -6)	Exit	BSc in Physics	Student must earn 132Credits as per teaching scheme
4	After Four Year (semester -8)	Exit	BSc Honours in Physics **OR** BSc Honours with Research in physics	Student must earn 176Credits as per teaching scheme

List of Major Courses

Sr. No.	Course Code	Course Name	Credit
1	11-PHM201-1C	Mechanics	4
2	11-PHM202-1C	Electricity, Magnetism and EMT	4
3	12-PHM203-1C	Thermal Physics and Quantum Mechanics	4
4	12-PHM204-1C	Wave and Optics	4
5	13-PHM205-2C	Solid state physics & Quantum Mechanics	4
6	13-PHM206-2C	Plasma Physics & Electronics	4
7	13-PHM207-2C	Electronics-I	4
8	14-PHM208-2C	Quantum, Classical and Mathematical Physics-I	4
9	14-PHM209-2C	Solid state and statistical mechanics-I	4
10	14-PHM210-2C	Nuclear Physics	4
11	15-PHM301-3C	Quantum, Classical and Mathematical Physics-II	4
12	15-PHM302-3C	Solid state and statistical mechanics-II	4
13	15-PHM303-3C	Electrodynamic-1	4
14	16-PHM304-3C	Mathematical Physics	4
15	16-PHM305-3C	Elements of Solid state Physics and Error Analysis	4
16	16-PHM306-3C	Atomic & Molecular Spectroscopy and Statistical Mechanics	4
17	17-PHM401-4C	Theoretical Condensed Matter Physics	4
18	17-PHM402-4C	Classical and Quantum Mechanics	4
19	17-PHM403-4C	Electrodynamics -II	4
20	18-PHM406-4C	Advanced quantum physics	4
21	18-PHM407-4C	Nano science and thin film	4
22	18-PHM408-4C	Elements of Experimental Physics	4

List of Minor Courses

Sr. No.	Course Code	Course Name	Credit
1	11-BIE204-1C	Biodiversity	4
2	11-CHE201-1C	Chemistry of organic compound-II	4
3	11-MAE201-1C	Fundamental of Statistics	4
4	12-CHE202-1C	Chemistry of organic compound- II	4
5	12-MAE202-1C	Basic of statistics	4
6	14-MAE203-2C	Abstract Algebra	4
7	14-CHE203-2C	Chemistry of Organic compounds-III	4
8	15-PHE301-3C	Electronics-II	4
9	15-PHE301-3O	Atomic cohesion& crystal binding	4
10	15-PHE302-3C	Analog and Digital Electronics-I	4
11	15-PHE302-3O	Concept of Langrangian mechanics	4
12	16-PHE303-3C	Analog and digital electronics-II	4
13	16-PHE303-30	Nano physics	4
14	17-PHE401-4C	Microwave communication: Electronic and Technology	4
15	17-PHE401-4O	Bio physics	4
16	18-PHE402-4C	Microprocessors, Programming, Interfacing & Applications	4
17	18-PHE402-4O	Absorption & Emission Spectroscopy	4

List of Multidisciplinary Courses (MD)

Sr. No.	Course Code	Course Name	Credit
1	11-MDC238-1C	Introduction to Biology	4
2	11-MDC222-1C	Matrix, vector and differentiation	4
3	11-MDC221-1C	Ultrastructure of cell	4
4	11-MDC223-1C	Cyber Security-1	4
6	12-MDC2261C	Digital Marketing	4
7	12-MDC227-1C	Cyber Security-2	4
8	12-MDC228-1C	Partial differentiation and complex number	4
9	12-MDC229-1C	Biochemisty &cellular basis of life	4
10	13-MDC232-2C	Vector space & Partial derivative	4
11	13-MDC233-2C	Reaction of Organic chemistry-III	4

List of Ability Enhancement Courses (AEC)

Sr. No.	Course Code	Course Name	Credit
1	11-AEC201-1C	Basic English-1	2
2	12-AEC202-1C	Basic English-2	2
3	13-AEC203-2C	Grammar and Communication Skill-1	2
4	14-AEC204-2C	Grammar and Communication Skill-2	2
5	16-AEC301-3C	Advanced English	2

List of Skill Enhancement Course (SEC)

Sr. No.	Course Code	Course Name	Credit
1	11-SEC201-1C	Tally Accounting	2
2	11-SEC202-1C	Personality Development	2
3	11-SEC203-1C	Laser & Fiber Optics	2
4	11-SEC204-1C	Business Mathematics-I	2
5	12-SEC206-1C	Instrumentation Measurement and analysis	2
6	12-SEC207-1C	Chemistry of Cosmetics and Hygiene Products	2
7	12-SEC208-1C	Biocomputing	2
8	12-SEC209-1C	Business Mathematics-II	2
9	13-SEC210-2C	Vaccum Pump, Pressure Guages and Instruments	2
10	13-SEC211-2C	Business Mathematics-III	2
11	13-SEC212-2C	Green Chemistry	2
13	14-SEC215-2C	Sound Engineering	2
16	14-SEC216-2C	Business Mathematics-IV	2
17	15-SEC301-3C	Experimental and Measurement Techniques	2
18	15-SEC302-3C	Instruments	2

List of Value Addition Course/Indian Knowledge System (VAC/IKS)

Sr. No.	Course Code	Course Name	Credit
1	12-VAC201-1C	National service scheme	2
2	14-VAC202-2C	Environmental Science	2
3	14-VAC203-2C	Integrated Personality development course	2
4	11-IKS101-1C	Yoga and Meditation	2
5	13-IKS102-2C	Vedic Mathematics	2