

# **CURRICULUM & SYLLABUS**



**SRM**  
UNIVERSITY  
DELHI-NCR, SONEPAT

**Bachelor of Science (Hons.) Physics**

**or**

**Bachelor of Science (Hons.) Physics with Research/  
Academic Projects**

**(A 4 Year Undergraduate Degree Program)**

**Under UGC Framework - 2022 based on NEP – 2020**

***(w.e.f. Academic Year 2023-24)***

**DEPARTMENT OF PHYSICS  
FACULTY OF SCIENCE AND HUMANITIES  
SRM UNIVERSITY DELHI-NCR, SONEPAT  
Plot No.39, Rajiv Gandhi Education City, P.S. Rai, Sonapat, Haryana-131029**

## **Vision**

SRM University Haryana aims to emerge as a leading World Class Institution that creates and disseminates knowledge upholding the highest standards of instruction in Engineering & Technology, Science & Humanities, Commerce, Management, Hotel Management & Medicine & Health Science. Along with academic excellence, our curriculum imparts integrity and social sensitivity so that our graduates may best serve the Nation and the World.

## **Mission**

- To create a diverse community campus that inspires freedom and innovation.
- Strengthen Excellence in educational & skill development processes.
- Continue to build productive international alliances.
- Explore optimal development opportunities available to students and faculty.
- Cultivate an exciting and rigorous research environment.

## **SCIENCE GRADUATE EMPLOYMENT ATTRIBUTES**

- **Able to Apply their Knowledge and Skills in the Disciplinary Area**
- **Analytical & critical thinking and problem solving skills.**
- **Scientific Temperament Towards Research & Innovation for the Betterment of Society**
- **Efficient Communication & Presentation Skills**
- **Dependability, reliability, responsibility, and independent leadership abilities**

## **B. Sc. PHYSICS PROGRAM EDUCATIONAL OBJECTIVES (PEOs):**

With the main focus of its research and teaching mission, the Physics Department works to provide its students with:

- I. A comprehensive, high-quality education in the physical sciences
- II. A flexible choice based curriculum with multiple Inter-disciplinary courses / Minor Stream Courses / Skill Enhancement Courses that allows students to tailor their education according to their specific interests.
- III. A scientific temperament towards the new discovery through direct participation in faculty research.
- IV. An increased awareness of the physical processes in the surrounding world.
- V. The prerequisite knowledge, analytical, mathematical, computational tools with which they learn problem solving ability which helps them to pursue research in a variety of physics-related and other fields.
- VI. To inculcate the habit of working together as a team and also develop the leadership abilities in them by introducing them to the various teaching learning techniques and coordination programmes.

## **B. Sc. PHYSICS PROGRAM LEARNING OUTCOMES (PLOs):**

Graduates from the B. Sc. Physics undergraduate degree program will be able to

- I. Demonstrate a conceptual understanding in the core areas of physics and the supporting mathematics including the range of validity of key concepts.
- II. Translate physical descriptions into mathematical equations, and conversely, explain the physical meaning of mathematical results.
- III. Use computational techniques such as coding at a level necessary to perform statistical analysis and simulations in solving complex problems.
- IV. Use basic laboratory equipment effectively in order to conduct measurements and analyze the results including the understanding of error limits.
- V. Communicate the scientific results efficiently, making use of clear and well organized writing and presentation skills, and employ equations and visualization tools as needed.

### MAPPING MATRIX OF PEOs & PLOs

Programme Educational Objectives (PEO's)	Program Learning Outcomes (PLO's)				
	PLO1	PLO2	PLO3	PLO4	PLO5
PEO1					
PEO2					
PEO3					
PEO4					
PEO5					
PEO6					

**Four Year B.Sc. Physics Programme Structure in alignment with NEP-  
2020 in the Department of Physics, SRMUH  
w.e.f. Academic Year 2023-24**

S. No.	Broad Category of Courses	No. of Courses	Credits	%
1	Major Course (Discipline Specific Course DSC)	24	$24 \times 4 = 96$	53.04
2	Interdisciplinary Course (IDC) / Minor Stream Course (MSC)	7	$7 \times 4 = 28$	15.47
3	Multi-Disciplinary Course (MDC)	3	$3 \times 3 = 9$	4.97
4	Ability Enhancement course (AEC)	4	$2 \times 4 = 8$	4.42
5	Skill Enhancement Course (SEC)	10	$10 \times 1 = 10$	5.52
6	Value Added Course (VAC)	3	$3 \times 2 = 6$	3.31
7	Project / Dissertation	4* / 3#	$1 \times 4 + 2 \times 2 + 1 \times 4 = 12^*$ $1 \times 2 + 1 \times 4 + 1 \times 6 = 12^\#$	6.63
8	Live Projects/Vocational Courses/Summer Internship	3	$3 \times 4 = 12$	6.63
Total		58* / 57#	181	100

\* B.Sc. (H) Physics # B.Sc. (H) Physics with Research / Academic Project

**Four Year B.Sc. Physics Programme Structure component-wise  
distribution in alignment with NEP-2020 in the Department of Physics,  
SRMUH w.e.f. Academic Year 2023-24.**

S. No.	Broad Category of Courses	No. of Courses	Component	Course division	Credits	Total Credit	%
1	Major Course	24	Theory	24	$13 \times 4= 52$ $11 \times 3= 33$	96	53.04%
			Practical	11	$11 \times 1= 11$		
2	Interdisciplinary Course (IDC) / Minor Stream Course (MSC)	7	Theory	7	$7 \times 4= 28$	28	15.47%
3	Multi-Disciplinar Course (MDC)	3	Theory	3	$3 \times 3= 9$	9	4.97%
4	Ability Enhancement course (AEC)	4	Theory	4	$2 \times 4= 8$	8	4.42%
5	Skill Enhancement Course (SEC)	10	Soft SEC Practical	5	$5 \times 1 = 5$	10	5.52%
			Techi. SEC Practical	5	$5 \times 1 = 5$		
6	Value Added Course (VAC)	3	Theory	2	$2 \times 2 = 4$	6	3.31%
			Practical	1	$2 \times 1 = 2$		
7	Project / Dissertation	4*	MSC*	3*	$1 \times 4 = 4^*$ $2 \times 2 = 4^*$	12	6.63%
			Project*	1*	$1 \times 4 = 4^*$		
		3#	Theory#	1	$2 \times 1 = 2$		
			Dissertation#	2	$1 \times 4 = 4$ $1 \times 6= 6$		
8	Live Projects/Vocational Courses/Summer Internship	3	Practical	3	$3 \times 4 = 12$	12	6.63%
	Total	58* / 57#	Theory	134 = 74%		181	100%
			Practical	23 = 12.7%			
			Project	24 = 13.3 %			

\* Students pursuing Honours will do 1 MSC course of 4 Credits, 2 MSC courses of 2 Credits and 1 Minor Project of 4 Credits in lieu of a Research Project/Dissertation.

# Students pursuing Honours with Research would complete 2 Credits of Research Methodology, 4 credits of Minor dissertation and 6 credits of Major Dissertation.



**Four Year B.Sc. Physics Programme Credit Structure Semester-wise in  
alignment with NEP-2020 in the Department of Physics, SRMUH  
w.e.f. Academic Year 2023-24**

Semester	Broad Category of Courses								Total Credits	Remarks
	Major	IDC/ MSC	MDC	AEC	SEC	VAC	RP/ Dissertation	Live Projects/ Vocational Courses/Summer Internship		
I	8	4	3	2	2	2	-	-	21	Certificate: 46 Credits
II	8	4	3	2	2	2	-	4	25	
III	12	4	3	2	2	-	-	-	23	Diploma: 95 Credits
IV	12	4	-	2	2	2	-	4	26	
V	16	4	-	-	2	-	-	-	22	Degree : 145 Credits
VI	16	8	-	-	-	-	-	4	28	
VII	12	6*	-	-	-	-	6#	-	18	Honours / Honours with Research: 181 Credits
VIII	12	6*	-	-	-	-	6#	-	18	
<b>3 Years</b>	<b>72</b>	<b>28</b>	<b>9</b>	<b>8</b>	<b>10</b>	<b>6</b>	<b>0</b>	<b>12</b>	<b>145</b>	
<b>%</b>	<b>49.67</b>	<b>19.31</b>	<b>6.20</b>	<b>5.52</b>	<b>6.9</b>	<b>4.14</b>	<b>0.00</b>	<b>8.28</b>	<b>100.00</b>	
<b>4 Years</b>	<b>96</b>	<b>28</b>	<b>9</b>	<b>8</b>	<b>10</b>	<b>6</b>	<b>12</b>	<b>12</b>	<b>181</b>	
<b>%</b>	<b>53.04</b>	<b>15.47</b>	<b>4.97</b>	<b>4.42</b>	<b>5.52</b>	<b>3.31</b>	<b>6.63</b>	<b>6.63</b>	<b>100.00</b>	

\* Students pursuing Honours will do 1 MSC courses for 4 Credits, 2 MSC courses of 2 Credits and 1 Minor Project of 4 Credits in lieu of a Research Project/Dissertation.

# Students pursuing Honours with Research would complete 2 Credits of Research Methodology, 4 credits of Minor dissertation and 6 credits of Major Research/Dissertation.

### **COURSE REVISION DETAILS:**

1. Implementation of four year B.Sc. Physics programme as per NEP 2020: The course structure and syllabus are revised from three year B.Sc. (H) Physics programme to four year B.Sc. (Hons.) Physics, B.Sc. (Hons.) Physics with Research / Academic Project programme following the UGC frame work 2022 based on NEP 2020. This four year under graduate Physics programme will be effective from the academic year 2023-24.
2. Course Objectives and Course Learning Outcomes are made more specific for all courses.

## B. Sc. PHYSICS - SEMESTER-I

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS101	Mathematical Physics I	3	1	0	4	Major
2	23PHBS102/ 23PHBS152	Mechanics & General Properties Of Matter	3	0	2	4	Major
3		IDC-1 / MSC-1	3	1	0	4	IDC/MSC
4		MDC 1	3	0	0	3	MDC
5		Functional English-1	2	0	0	2	AEC
6		Effective Communication Skills	0	0	2	1	SEC (Soft)
7		Digital Literacy & IT Skills	0	0	2	1	SEC (Tech)
8		Indian Constitution & Polity	2	0	0	2	VAC
<b>TOTAL</b>			16	2	6	21	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

## B. Sc. PHYSICS - SEMESTER-II

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS201	Mathematical Physics II	3	1	0	4	Major
2	23PHBS202/ 23PHBS252	Waves and Optics	3	0	2	4	Major
3		IDC 2 / MSC2	3	1	0	4	IDC/MSC
4		MDC 2	3	0	0	3	MDC
5		Functional English-2	2	0	0	2	AEC
6		Teamwork & Interpersonal Skills	0	0	2	1	SEC (Soft)
7		Advanced Excel Skills	0	0	2	1	SEC (Tech)
8		Environmental Protection & Sustainable development	2	0	0	2	VAC
9	23PHBS271	Live Projects/Vocational Courses/Summer Internship				4	SIP
<b>TOTAL</b>			<b>16</b>	<b>2</b>	<b>6</b>	<b>25</b>	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

**On Exit, students shall be awarded UG Certificate (Physics) on securing the requisite 46 Credits on completion of II-Semester.**

## B. Sc. PHYSICS -SEMESTER-III

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS301/ 23PHBS351	Mathematical Physics III	3	0	2	4	Major
2	23PHBS302/ 23PHBS352	Electricity & Magnetism	3	0	2	4	Major
3	23PHBS303/ 23PHBS353	Thermal Physics	3	0	2	4	Major
4		IDC 3 / MSC 3	3	1	0	4	IDC/MSC
5		MDC 3	3	0	0	3	MDC
6		Hindi / German / French	2	0	0	2	AEC
7		Presentation Skills	0	0	2	1	SEC (Soft)
8		Statistical Analysis with SPSS	0	0	2	1	SEC (Tech)
<b>TOTAL</b>			17	1	10	23	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

## B. Sc. (H) PHYSICS -SEMESTER-IV

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS401/ 23PHBS451	Mathematical Physics IV	3	0	2	4	Major
2	23PHBS402/ 23PHBS452	Electronics I	3	0	2	4	Major
3	23PHBS403/ 23PHBS453	Modern Physics	3	0	2	4	Major
4		IDC 4 / MSC4	3	1	0	4	IDC/MSC
5		Hindi / German / French	2	0	0	2	AEC
6		Professional Skills	0	0	2	1	SEC (Soft)
7		R language programming	0	0	2	1	SEC (Tech)
8		Sports, Yoga & Fitness	0	0	4	2	VAC
9	23PHBS471	Live Projects/Vocational Courses/Summer Internship				4	SIP
<b>TOTAL</b>			14	1	14	26	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

**On Exit, students shall be awarded UG Diploma (Physics) on securing the requisite 95 Credits on completion of IV-Semester.**

## B. Sc. (H) PHYSICS - SEMESTER-V

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS501	Classical Mechanics	3	1	0	4	Major
2	23PHBS502/ 23PHBS552	E.M. Theory	3	0	2	4	Major
3	23PHBS503	Quantum Mechanics I	3	1	0	4	Major
4	23PHBS504/ 23PHBS554	Electronics II	3	0	2	4	Major
5		MSC 5	3	1	0	4	MSC
6		Aptitude & Reasoning	0	0	2	1	SEC (Soft)
7		Programming with MATLAB	0	0	2	1	SEC (Tech)
<b>TOTAL</b>			15	3	8	22	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

## B. Sc. (H) PHYSICS - SEMESTER-VI

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS601/ 23PHBS651	Condensed Matter Physics I	3	0	2	4	Major
2	23PHBS602	Electrodynamics	3	1	0	4	Major
3	23PHBS603	Quantum Mechanics II	3	1	0	4	Major
4	23PHBS604	Laser and Non-linear Optics	3	1	0	4	Major
5		MSC 6	3	1	0	4	MSC
6		MSC 7	3	1	0	4	MSC
7	23PHBS671	Live Projects/Vocational Courses/Summer Internship				4	SIP
<b>TOTAL</b>			18	5	2	28	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

**On Exit, students shall be awarded B.Sc. Degree (Physics) on securing the requisite 145 Credits on completion of VI-Semester.**



## B. Sc. (H) PHYSICS -SEMESTER-VII

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS701	Condensed Matter Physics II	3	1	0	4	Major
2	23PHBS702	Nuclear and Particle Physics	3	1	0	4	Major
3	23PHBS703	Statistical Mechanics I	3	1	0	4	Major
4		MSC 8 *	2*	0	0	2 *	MSC *
5		MSC 9 *	3*	1*	0	4 *	MSC *
6		Research Methodology #	2#	0	0	2 #	MSC for RP #
7	23PHBS771	Minor Project / Minor Dissertation #	-	-	-	4 #	Research Project/Dissertation for RP #
<b>TOTAL</b>			11# / 14 *	3 #/ 4*	0	18	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

**\* Students pursuing Honours will do 1 MSC Course of 4 Credits and 1 MSC Course of 2 Credits in lieu of Research Project in 7th Semester**

**# Students pursuing Honours with Research will do Research Methodology of 2 Credit and Research Minor Project/ Minor Dissertation of 4 Credits.**

## B. Sc. (H) PHYSICS -SEMESTER-VIII

S.No.	Course Code	Course Title	L	T	P	Credits	Course Category
1	23PHBS801	Atomic and Molecular Physics	3	1	0	4	Major
2	23PHBS802	Semi-Conductor Physics	3	1	0	4	Major
3	23PHBS803	Statistical mechanics II	3	1	0	4	Major
4		MSC 8 *	2*	0	0	2 *	MSC *
5	23PHBS871	Minor Project *				4 *	Minor Research Project *
6	23PHBS872	Major Project / Major Dissertation #	-	-	-	6 #	Research Project/Dissertation for RP #
<b>TOTAL</b>			9# / 11 *	3	0	18	

**L – Lectures, T- Tutorial, P- Practical, C- credits**

**\* Students pursuing Honours will do 1 Course of 2 Credits and a Minor Project of 4 credits in lieu of Research Project in 8th Semester**

**# Students pursuing Honours with Research will do Research Project/Dissertation of 6 Credits.**

**On Exit, students shall be awarded B.Sc. (Physics) (Honours with Research) or (Honours) or (Honours with Research in Discipline-1 (Major) with Discipline-2 (Minor) after securing the requisite 181 Credits on completion of VIII-Semester.**

**List of Major Courses offered to  
Four Year B.Sc. Physics programme in the Department of Physics  
w.e.f. Academic Year 2023-24**

S No	Semester	Course Code	Course Title	L	T	P	Credits	Course Category
1	I	23PHBS101	Mathematical Physics I	3	1	0	4	Major Course
2		23PHBS102	Mechanics & General Properties Of Matter	3	0	0	3	Major Course
3		23PHBS152	Mechanics & General Properties Of Matter Lab	0	0	2	1	Major Course Lab
4	II	23PHBS201	Mathematical Physics II	3	1	0	4	Major Course
5		23PHBS202	Waves & Optics	3	0	0	3	Major Course
6		23PHBS252	Waves & Optics Lab	0	0	2	1	Major Course Lab
7	III	23PHBS301	Mathematical Physics III	3	0	0	3	Major Course
8		23PHBS351	Computational Physics lab I	0	0	2	1	Major Course Lab
9		23PHBS302	Electricity & Magnetism	3	0	0	3	Major Course
10		23PHBS352	Electricity & Magnetism lab	0	0	2	1	Major Course Lab
11		23PHBS303	Thermal Physics	3	0	0	3	Major Course
12		23PHBS353	Thermal Physics lab	0	0	2	1	Major Course Lab
13	IV	23PHBS401	Mathematical Physics IV	3	0	0	3	Major Course
14		23PHBS451	Computational Physics lab II	0	0	2	1	Major Course Lab
15		23PHBS402	Electronics - I	3	0	0	3	Major Course
16		23PHBS452	Electronics - I Lab	0	0	2	1	Major Course Lab
17		23PHBS403	Modern Physics	3	0	0	3	Major Course
18		23PHBS453	Modern Physics Lab	0	0	2	1	Major Course Lab
19	V	23PHBS501	Classical Mechanics	3	1	0	4	Major Course
20		23PHBS502	E. M. Theory	3	0	0	3	Major Course
21		23PHBS552	E. M. Theory Lab	0	0	2	1	Major Course Lab
22		23PHBS503	Quantum Mechanics I	3	1	0	4	Major Course
23		23PHBS504	Electronics - II	3	0	0	3	Major Course
24		23PHBS554	Electronics - II lab	0	0	2	1	Major Course Lab
25	VI	23PHBS601	Condensed Matter Physics I	3	0	0	3	Major Course
26		23PHBS651	Condensed Matter Physics I Lab	0	0	2	1	Major Course Lab
27		23PHBS602	Electrodynamics	3	1	0	4	Major Course
28		23PHBS603	Quantum Mechanics II	3	1	0	4	Major Course
29		23PHBS604	Laser and Non linear Optics	3	1	0	4	Major Course
30	VII	23PHBS701	Condensed Matter Physics II	3	1	0	4	Major Course
31		23PHBS702	Nuclear and Particle Physics	3	1	0	4	Major Course
32		23PHBS703	Statistical Mechanics I	3	1	0	4	Major Course
33	VIII	23PHBS801	Atomic and Molecular Physics	3	1	0	4	Major Course
34		23PHBS802	Semi Conductor Physics	3	1	0	4	Major Course
35		23PHBS803	Statistical mechanics II	3	1	0	4	Major Course

**List of Interdisciplinary Courses (IDC) / Minor Stream Courses (MSC) offered to  
Four Year B.Sc. Physics programme in the Department of Physics  
w.e.f. Academic Year 2023-24**

S. No	Cat.	Course code	Course title	Departme	L	T	P	C
1	IDC	23MABS00	Introduction to Algebra	Mathemati	3	1	0	4
2		23MABS00	Differential calculus	Mathemati	3	1	0	4
3		23MABS00	Differential Equations	Mathemati	3	1	0	4
4		23MABS00	Statistical Methods and Probability	Mathemati	3	1	0	4
5		23CYBS001	Physical Chemistry I	Chemistry	3	1	0	4
6		23CYBS002	Inorganic Chemistry	Chemistry	3	1	0	4
7		23CYBS003	Physical Chemistry II	Chemistry	3	1	0	4
8		23CYBS004	Analytical Chemistry	Chemistry	3	1	0	4
9	MSC	23PHBS001	Advanced Electronics	Physics	3	1	0	4
10		23PHBS002	Astronomy & Astrophysics	Physics	3	1	0	4
11		23PHBS003	Nanomaterials	Physics	3	1	0	4
12		23PHBS004	Biophysics	Physics	3	1	0	4
13		23PHBS005	Radiation Physics	Physics	3	1	0	4
14		23PHBS006	Medical Physics	Physics	3	1	0	4
15		23PHBS007	Atmospheric Physics	Physics	3	1	0	4
16		23PHBS008	Fiber Optics	Physics	3	1	0	4
17		23PHBS009	Soft Matter Physics	Physics	3	1	0	4
18		23PHBS010	Renewable Energy Physics	Physics	3	1	0	4
19		23PHBS011	Novel & Smart Materials	Physics	3	1	0	4
20		23PHBS012	Plasma Physics	Physics	3	1	0	4
21		23PHBS013	Nanophotonics	Physics	3	1	0	4
22		23PHBS014	Non-linear spectroscopy	Physics	3	1	0	4
23		23PHBS015	Optoelectronics	Physics	3	1	0	4
24		23PHBS016	Advanced Nuclear Physics	Physics	3	1	0	4
25		23PHBS017	Characterization techniques	Physics	3	1	0	4
26		23PHBS018	Nanomagnetism and Spintronics	Physics	3	1	0	4
27		23PHBS019	Quantum Field Theory	Physics	3	1	0	4
28		23PHBS020	Quantum Informatics & Quantum Computing I	Physics	2	0	0	2
29		23PHBS021	Quantum Informatics & Quantum Computing II	Physics	2	0	0	2
30		23PHBS022	Advanced Solid State Physics I	Physics	2	0	0	2
31		23PHBS023	Advanced Solid State Physics II	Physics	2	0	0	2
32		23RMBS710	Research Methodology	Physics	2	0	0	2

**List of Multidisciplinary Courses (MDC) offered to  
Four Year B.Sc. Physics programme in the Department of Physics  
w.e.f. Academic Year 2023-24**

<b>Cat.</b>	<b>Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>MDC I</b>	23MDC201	Renewable Energy Sources	3	0	0	3
	23MDC202	Hybrid Electric Vehicle	3	0	0	3
	23MDC301	IPR in Business	3	0	0	3
	23MDC302	Library Information Sciences & Media Literacy	3	0	0	3
	23MDC401	Management Process & Organizational Behaviour	3	0	0	3
<b>MDC II</b>	23MDC203	Introduction to Bio-engineering	3	0	0	3
	23MDC204	Introduction to Robotics	3	0	0	3
	23MDC303	Psychology and Emotional Intelligence	3	0	0	3
	23MDC304	Indian Economy	3	0	0	3
	23MDC402	Creating an Entrepreneurial Mind	3	0	0	3
<b>MDC III</b>	23MDC205	Arduino based programming	3	0	0	3
	23MDC305	Electoral Literacy in India	3	0	0	3
	23MDC403	Personal Financial Planning	3	0	0	3
	23MDC404	Interior Design	3	0	0	3

**List of Ability Enhancement Courses (AEC) offered to  
Four Year B.Sc. Physics programme in the Department of Physics  
w.e.f. Academic Year 2023-24**

<b>S. No.</b>	<b>Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	23AEC101	Functional English I	2	0	0	2
2	23AEC201	Functional English II	2	0	0	2
3	23HN101 I / 23FLGR301 I / 23FLFR301 I	Hindi / German / French	2	0	0	2
4	23HN101 II / 23FLGR301 II / 23FLFR301 II	Hindi / German / French	2	0	0	2

**List of Value Added Courses (VAC) offered to  
Four Year B.Sc. Physics programme in the Department of Physics  
w.e.f. Academic Year 2023-24**

<b>S. No.</b>	<b>Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	23VAC102	Indian Constitution & Polity	2	0	0	2
2	23VAC101	Environment Protection & Sustainable Development	2	0	0	2
3	23VAC103	Sports, Yoga & Fitness	0	0	4	2

**List of Skill Enhancement Courses (SEC) offered to  
Four Year B.Sc. Physics programme in the Department of Physics  
w.e.f. Academic Year 2023-24**

**Courses on Soft Skills**

S. No.	Code	Course Name	L	T	P	Credits
1	23SS351	Effective Communication Skills	0	0	2	1
2	23SS452	Teamwork & Interpersonal Skills	0	0	2	1
3	23SS553	Presentation Skills	0	0	2	1
4	23SS654	Professional Skills	0	0	2	1
5	23AR755	Aptitude & Reasoning	0	0	2	1

**Courses on Technical Skills**

S. No.	Code	Course Name	L	T	P	Credits
1	23TS101	Digital Literacy & IT Skills	0	0	2	1
2	23SS202	Advanced Excel Skills	0	0	2	1
3	23SS303	Statistical Analysis with SPSS	0	0	2	1
4	23SS404	R language programming	0	0	2	1
5	23SS505	Programming with MATLAB	0	0	2	1