

School of Basic Sciences : BSc (Hons) Physics (3-years)

Year 1

Semester-I

S. No.	Category	Name of the Course				
			L	T	P	C
1	Core	Electricity and Magnetism	3	0	1	4
2	Core	Mathematical Physics	3	1	0	4
3	AEC	English Proficiency I	0	0	2	2
4	VAC	IT Tools and Data Analytics	0	0	2	2
5	MDC-1	Foundation of Programming	2	0	2	4
6	GE	Introduction to Statistics	3	1	0	4
Total Credits						20

Semester-II

S. No.	Category	Name of the Course				
			L	T	P	C
1	Core	Analog systems	3	0	1	4
2	Core	Mechanics	3	0	1	4
3	Core	Optics, Vibration and Waves	3	0	1	4
4	AEC	English Proficiency II	0	0	2	2
5	VAC	Choose Any one from Basket of VAC	2	0	0	2
6	GE	Generic Elective/Minor	--	--	--	4
Total Credits						20

Year 2

Semester-III

S. No.	Category	Name of the Course				
			L	T	P	C
1	Core	Relativity and Quantum Physics	3	1	0	4
2	Core	Digital Systems	3	0	1	4
3	Core	Fundamental of astronomy and astrophysics	3	1	0	4
4	AEC	Today's Science, Tomorrow's World I	2	0	0	2
5	Internship	Social Internship	-	-	-	2
6	SEC	Choose Any one from Basket of SEC	3	0	0	3
7	GE	Generic Elective/Minor	--	--	--	4
Total Credits						23
Semester-IV						
S. No.	Category	Name of the Course				
			L	T	P	C
1	Core	Quantum Mechanics	3	1	0	4
2	Core	Electromagnetism	3	1	0	4
3	Core	Condensed Matter Physics	3	0	1	4
4	AEC	Today's Science, Tomorrow's World II	2	0	0	2
5	SEC	Choose Any one from Basket of SEC	-	-	-	3
6	MDC-2	Choose Any one from Basket of MDC	-	-	-	2
7	GE	Generic Elective/Minor	--	--	--	4
Total Credits						23

Year 3						
Semester-V						
S. No.	Category	Name of the Course				
			L	T	P	C
1	Core	Nuclear and Particle Physics	3	1	0	4
2	Core	Thermal and Statistical Physics	3	0	1	4
3	Elective	DSE/Specialized Elective 1	-	-	-	4
4	GE	Generic Elective/Minor	-	-	-	4
5	SEC	Choose Any one from Basket of SEC	-	-	-	3
6	VAC	Choose Any one from Basket of VAC	-	-	-	2
7	Internship	Internship (Industrial/Academic/Research)	-	-	-	2
Total Credits						23
Semester-VI						
S. No.	Category	Name of the Course				
			L	T	P	C
1	Elective	DSE/Specialized Elective-2	--	--	--	4
2	Elective	DSE/Specialized Elective -3	--	--	--	4
3	Elective	DSE/Specialized Elective-4	--	--	--	4
4	Elective	DSE/Specialized Elective-5	--	--	--	4
5	Minor	Generic Elective/Minor	--	--	--	4
6	MDC-3	Choose Any one from Basket of MDC	-	-	-	3
Total Credits						23

List of courses for Specialization in: Material Science

S. No.	Category	Name of the Course				
			L	T	P	C
1	Elective 1	Nanostructured materials and Characterization	--	--	--	4
2	Elective 2	Soft Matter Physics	--	--	--	4
3	Elective 3	Materials Modelling and Simulation	--	--	--	4
4	Elective 4	Advanced functional Materials	--	--	--	4
5	Elective 5	Materials for Aviation and Space Technologies	--	--	--	4
6	Elective 6	Materials for energy storage devices and Green	--	--	--	4
7	Elective 7	Advanced sensors and Actuators	--	--	--	4
		Advanced Solar Technology: Materials and	--	--	--	4

List of courses for Specialization in: Astrophysics and Astronomy

S. No.	Category	Name of the Course	L	T	P	C
8	Elective 1	Planetary Science	--	--	--	4
9	Elective 2	Observational Astronomy	--	--	--	4
10	Elective 3	Astronomical Techniques	--	--	--	4
11	Elective 4	Modern Cosmology and Astrophysics	--	--	--	4
12	Elective 5	Detectors and sensors for space observations	--	--	--	4
13	Elective 6	Stellar Structure & Evolution	--	--	--	4
		High-Energy Astrophysics	--	--	--	4
14	Elective 7	Astrobiology	--	--	--	4
		Radio Astronomy and Space Science	--	--	--	4

Minor courses (in AI and Data Science)

S. No.	Category	Name of the Course	L	T	P	C
15	Minor	Introduction to Statistics	3	1	0	4
16	Minor	Probability Theory: Foundation for Data Science	--	--	--	4
17	Minor	Introduction to Data Analysis	--	--	--	4
18	Minor	Introduction to Machine Learning	--	--	--	4
19	Minor	Deep Learning and Neural Networks	--	--	--	4
20	Minor	Computer Vision and Image Understanding	--	--	--	4
21	Minor	Generative AI	--	--	--	4
22	Minor	Soft Computing	--	--	--	4

Minor courses (in Semiconductor Technology)						
S. No.	Category	Name of the Course	L	T	P	C
23	Minor	Basic Semiconductor Physics	3	1	0	4
24	Minor	Electronic Materials	--	--	--	4
25	Minor	Microcontrollers and Embedded Systems	--	--	--	4
26	Minor	Semiconductor Fabrication and Characterization	--	--	--	4
27	Minor	Analog Integrated Circuit	--	--	--	4
28	Minor	VLSI Design	--	--	--	4
29	Minor	Fundamentals of MEMS and NEMS	--	--	--	4
30	Minor	Semiconductor Device Modelling	--	--	--	4
List of Discipline Specific Electives (DSE) for BSc (H) Physics						
S. No.	Category	Name of the Course	L	T	P	C
31	Elective 1	Semiconducting devices and communication	3	1	0	4
		Radio-Physics and Electronics	3	1	0	4
32	Elective 2	Fundamentals of Quantum Computing	3	1	0	4
		Advanced Mathematical Physics	3	1	0	4
33	Elective 3	Laser Physics and Applications	3	1	0	4
		Energy Materials and Application	3	1	0	4
34	Elective 4	Fiber Optics and Communications	3	1	0	4
		Plasma Physics	3	1	0	4
35	Elective 5	Reactor Physics	3	1	0	4
		Solar Materials & Fabrication	3	1	0	4
36	Elective 6	Low Dimension Physics and Characterization	3	1	0	4
		Soft Matter Physics	3	1	0	4
37	Elective 7	Advanced functional Materials	3	1	0	4
		Planetary Science	3	1	0	4
		Physics of Atmosphere and Climate Change	3	1	0	4
		Materials and Technologies for Green Hydrogen	3	1	0	4

Multidisciplinary Courses (MDC)- Max. 9 credits

S. No.	Category	Name of the Course	L	T	P	C
1	MDC	Foundation of Programming	2	0	2	4
2	MDC	Indian legal systems for sciences	2	0	0	2
3	MDC	Stock exchange	2	0	0	2
4	MDC	Machine learning	3	0	0	3
5	MDC	Environmental Toxicology and Society	3	0	0	3
6	MDC	Research Methodology	3	0	0	3

Value Based Courses (VAC)- Max. 6 credits

S. No.	Category	Name of the Course	L	T	P	C
1.	VAC	IT Tools and Data Analytics	0	0	2	2
2.	VAC	Introduction of Value Based Education	2	-	-	2
3.	VAC	Health and Nutrition	2	-	-	2
4.	VAC	Art of Happiness	2	-	-	2
5.	VAC	Vedic Mathematics	1	-	1	2
6.	VAC	Digital Marketing	2	-	-	2

Skill Enhancement Courses (SEC)- Max. 9 credits

S. No.	Category	Name of the Course	L	T	P	C
1.	SEC	Statistics with R	1	0	2	3
2.	SEC	Electronic Product Testing	2	0	1	3
3.	SEC	Introduction to Artificial Intelligence	2	0	1	3
4.	SEC	Cyber Sphere & Security Global Concern	3	0	0	3
5.	SEC	Testing of Cosmetics and Hygienic Products	2	0	1	3
6.	SEC	Innovation and Entrepreneurship	3	0	0	3

Ability Enhancement Courses (AEC)- Max. 8 credits

S. No.	Category	Name of the Course	L	T	P	C
1.	AEC	English Proficiency I	0	0	2	2
2.	AEC	English Proficiency II	0	0	2	2
3.	AEC	Today's Science, Tomorrow's World I	2	0	0	2
4.	AEC	Today's Science, Tomorrow's World II	2	0	0	2