

Department of Physics

B.Sc. (Hons.) Physics

Curriculum

(Applicable to the students admitted from AY: 2025 onwards)



School of Engineering and Sciences
SRM University AP, Andhra Pradesh

ABBREVIATIONS

AEC	Ability Enhancement Courses
VAC	Value Added Courses
SEC	Skill Enhancement Courses
FIC	Foundation & Interdisciplinary Courses
OE	Open Elective
RDIP	Research / Design / Industrial Practice / Project / Thesis / Internship
CE	Core Elective
CC	Core Course
SE	Stream Elective
TE	Technical Elective

SEMESTER - I							
S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	AEC	U AEC	Art of Listening, Speaking and Reading Skills	1	0	1	2
2	VAC	U VAC	Environmental Science	2	0	0	2
3	SEC	S SEC	Analytical Reasoning and Aptitude Skills	1	1	1	3
4	FIC	S FIC	Emerging Technologies	2	0	0	2
5	FIC	S FIC	Chemical Basis of Life	2	0	1	3
6	FIC	S FIC	Mathematics for the Physical World	2	1	0	3
7	FIC	S FIC	Fundamentals of Computing	2	0	1	3
Semester Total				12	2	4	18

SEMESTER - II							
S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	AEC	U AEC	Effective Writing and Presentation Skills	1	0	1	2
2	VAC	U VAC	Universal Human Values and Ethics	2	0	0	2
3	SEC	S SEC	Entrepreneurial Mindset	2	0	0	2
4	FIC	S FIC	Principles of Management	3	0	0	3
5	FIC	S FIC	Psychology for Everyday Living	3	0	0	3
6	Core	CC	Foundations of Mathematical Physics	3	1	0	4
7	Core	CC	Classical and Modern Physics	3	0	1	4
Semester Total				17	1	2	20

SEMESTER - III

S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	AEC	S AEC	Problem Solving Skills	1	0	1	2
2	VAC	U VAC	Co-Curricular Activities	0	0	2	2*
3	VAC	U VAC	Community Service and Social Responsibility	0	0	2	2*
4	SEC	S SEC	Digital Literacy	1	0	1	2
5	Core	CC	Waves and Oscillations	3	0	1	4
6	Core	CC	Advanced Mathematical Physics	3	1	0	4
7	Core	CC	Quantum Mechanics	3	1	0	4
8	Elective	OE	Open Elective	3	0	0	3
Semester Total				14	2	3	19

SEMESTER - IV

S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	AEC	S AEC	Creativity and Critical Thinking Skills	1	0	1	2
2	VAC	U VAC	Co-Curricular Activities	0	0	2	2*
3	VAC	U VAC	Community Service and Social Responsibility	0	0	2	2*
4	SEC	D SEC	Mathematical Modelling of Physical Data	2	0	0	2
5	Core	CC	Electrostatics and Electric Current	3	0	1	4
6	Core	CC	Heat and Thermodynamics	3	0	1	4
7	Core	CC	Electrodynamics	3	0	1	4
8	Core	CC	Introduction to Optics	3	0	1	4
9	Elective	OE	Open Elective	3	0	0	3
Semester Total				18	0	5	23

SEMESTER - V							
S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	VAC	U VAC	Co-Curricular Activities	0	0	2	2*
2	VAC	U VAC	Community Service and Social Responsibility	0	0	2	2*
3	Core	CC	Statistical Physics	3	0	1	4
4	Core	CC	Atomic and Molecular Physics	3	0	1	4
5	Core	CC	Analog and Digital Electronics	3	0	1	4
6	Core	CC	Special Theory of Relativity	3	1	0	4
7	Elective	OE	Open Elective	3	0	0	3
Semester Total				15	1	7	19

SEMESTER - VI							
S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	VAC	U VAC	Co-Curricular Activities	0	0	2	2
2	SEC	E SEC	Career Skills – I	3	0	0	3
3	SEC	E SEC	Career Skills - II	3	0	0	3
4	Core	CC	Solid State Physics	3	0	1	4
5	Core	CC	Nuclear and Particle Physics	3	1	0	4
6	Elective	CE	Core Elective	3	1	0	4
7	Elective	OE	Open Elective	3	0	0	3
8	RDIP	RDIP	Mentored Project	0	0	4	4
Semester Total				18	2	7	27

SEMESTER - VII							
S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	Elective	CE	Core Elective	3	1	0	4
2	Elective	CE	Core Elective	3	1	0	4
3	Elective	CE	Core Elective	3	1	0	4
4	RDIP	RDIP	Research Degree Project - I	0	0	5	5
5	Elective	OE	Open Elective	3	0	0	3
Semester Total				12	3	5	20

SEMESTER - VIII							
S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	RDIP	RDIP	Research Degree Project - II	0	0	12	12
Semester Total				0	0	12	12

Core Electives

S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	Elective	CE	Introduction to Astrophysics	3	1	0	4
2	Elective	CE	Introduction to soft matter physics	3	1	0	4
3	Elective	CE	Numerical methods and simulation techniques	2	0	2	4
4	Elective	CE	Electronic materials & device physics	2	0	2	4
5	Elective	CE	Device characterization and instrumentation	2	0	2	4
6	Elective	CE	Optical information processing / Optoelectronic Devices	3	0	1	4
7	Elective	CE	Introduction to LabVIEW and ZView	0	0	4	4
8	Elective	CE	Artificial Intelligence in Complex Systems	3	1	0	4
9	Elective	CE	Physics of finances	2	0	2	4
10	Elective	CE	Game theory: Classical and Quantum	2	0	2	4
11	Elective	CE	Battery Materials	3	0	1	4
12	Elective	CE	Battery Design & Testing	2	0	2	4
13	Elective	CE	Beyond Li ion batteries	2	0	2	4
14	Elective	CE	Quantum Computation: Background and Formulation	3	1	0	4
15	Elective	CE	Quantum Computations and Algorithms	3	0	1	4
16	Elective	CE	Quantum Optimization and Computation	3	0	1	4

Minor in Quantum Computation

S.No	Category	Sub Category	Course Title	L	T/D	P/Pr	C
1	Elective	OE	Quantum Mechanics	3	0	0	3
2	Elective	OE	Quantum Computation: Background and Formulation	3	0	0	3
3	Elective	OE	Quantum Computations and Algorithms	3	0	0	3
4	Elective	OE	Quantum Optimization and Computation	3	0	0	3
5	Elective	OE	Foundations of Mathematical Physics	3	0	0	3

Minor in Device Physics

S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	Elective	OE	Solid state physics	3	0	0	3
2	Elective	OE	Electronic materials & smart devices	3	0	0	3
3	Elective	OE	Thin film deposition and device fabrication	3	0	0	3
4	Elective	OE	Simulation and Modelling in solid state devices	3	0	0	3
5	Elective	OE	Solid state Ionic Devices	3	0	0	3
6	Elective	OE	Device characterization and instrumentation	3	0	0	3

Career Skills

S.No	Category	Sub-Category	Course Title	L	T/D	P/Pr	C
1	SEC	D SEC	Introduction to R and Python	1	1	1	3
2	SEC	D SEC	Scientific Research Skills: From Concept to Communication	1	1	1	3