



SCHOOL OF ENGINEERING AND SCIENCES

B.Sc. (Hons) Physics

2023-27 Batch

Category Wise Credit Distribution

Course Sub-category	Subcategory Credits	Category Credits	Learning hours
Ability Enhancement Courses (AEC)		8	240
University AEC	4		
School AEC	4		
Value Added Courses (VAC)		8	240
University VAC	4		
School VAC	4		
Skill Enhancement Courses (SEC)		15	450
School SEC	7		
Department SEC	8		
SEC Elective			
Multidisciplinary/Interdisciplinary /Foundation (MIC)		17	510
School MIC	17		
Department MIC	0		
Core + Core Elective including Specialization (CC)		80	2400
Core			
Core Elective (Inc Specialization)			
Minor (MC) + Open Elective (OE)		15	450
Research / Design/ Internship/ Project (RDIP)		17	510
Internship / Design Project / Startup / NGO	5		
Internship / Research / Thesis	12		
Total		160	4800

Semester Wise Course Credit Distribution Under Various Categories

Semester										
Category	S1	S2	S3	S4	S5	S6	S7	S8	Total	%age
Ability Enhancement Courses (AEC)	2	2	2	2					8	5%
Value Added Courses (UG Common) (VAC)	2	2	4*	4*	4*	4			8	5%
Skill Enhancement Courses (SEC)	3	2	2	2	3	3			15	9.4%
Multidisciplinary / Interdisciplinary / Foundation Core (FIC)	11	6							17	10.6%
Major Core + Specialization (CC)		8	12	16	16	16	12		80	50%
Minor (MC) + Open Elective (OE)			3	3	3	3	3		15	9.4 %
Research / Design/ Industrial Practice / Project (RDIP)							5	12	17	10%
Grand Total	18	20	19	23	22	26	20	12	160	

B. Sc. Physics Hons with Research

Semester-1							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
AEC	University AEC	Art of Listening, Speaking and Reading Skills	1	0	1	2	60
VAC	University VAC	Environmental Science	2	0	0	2	60
SEC	School SEC	Analytical Reasoning and Aptitude Skills	1	1	1	3	90
FIC	School FIC	Chemical Basis of Life	2	0	1	3	90
FIC	School FIC	Mathematics for the Physical World	2	1	0	3	90
FIC	School FIC	Fundamentals of Computing	2	0	1	3	90
FIC	School FIC	Emerging Technologies	2	0	0	2	60
Semester Total: 18							540

Semester-2							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
AEC	University AEC	Effective Writing and Presentation Skills	1	0	1	2	60
VAC	University VAC	Universal Human Values and Ethics	2	0	0	2	60
SEC	School SEC	Entrepreneurial Mindset	0	0	2	2	60
FIC	School FIC	Principles of Management	3	0	0	3	90
FIC	School FIC	Psychology for Everyday Living	3	0	0	3	90
CC	Core	Foundations of Mathematical Physics	3	1	0	4	120
CC	Core	Classical and Modern Physics	3	0	1	4	120
Semester Total						20	600

Semester-3							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
AEC	School AEC	Problem Solving Skills	1	0	1	2	60
VAC	School VAC	Co-Curricular Activities	0	0	2	2*	0
VAC	School VAC	Community Service and Social Responsibility	1	0	1	2*	0
SEC	Department/School SEC	Digital Literacy	1	0	1	2	60
CC	Core	Wave and Oscillations	3	0	1	4	120
CC	Core	Advanced Mathematical Physics	3	1	0	4	120
CC	Core	Quantum Mechanics	3	1	0	4	120
OE/Minor	OE/Minor		3	0	0	3	90
Semester Total						19	570

Semester-4							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
AEC	School AEC	Creativity and Critical thinking Skills	1	0	1	2	60
VAC	School VAC	Co-Curricular Activities	0	0	2	2*	0
VAC	School VAC	Community Service and Social Responsibility	1	0	1	2*	0
SEC	Department/School SEC	Mathematical Modelling of Physical Data	2	0	0	2	60
CC	Core	Electrostatics and Electric Current	3	0	1	4	120
CC	Core	Heat and Thermodynamics	3	1	0	4	120
CC	Core	Electrodynamics	3	1	0	4	120
CC	Core	Analog and Digital Electronics	3	0	1	4	120
OE/Minor	OE/Minor		3	0	0	3	90
Semester Total						23	690

Semester-5							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
VAC	School VAC	Co-Curricular Activities	0	0	2	2*	0
VAC	School VAC	Community Service and Social Responsibility	1	0	1	2*	0
SEC	SEC Elective	Career Skills 1	2	0	1	3	90
CC	Core	Introduction to Optics	3	0	1	4	120
CC	Core	Statistical Physics	3	0	1	4	120
CC	Core	Atomic and Molecular Physics	3	1	0	4	120
CC	Core	Special Theory of Relativity	3	1	0	4	120
OE/Minor	OE/Minor		3	0	0	3	90
Semester Total						22	660

Semester-6							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
VAC	School VAC	Co-Curricular Activities	0	0	2	2	60
VAC	School VAC	Community Service and Social Responsibility	1	0	1	2	60
SEC	SEC Elective	Career Skills 2	2	0	1	3	90
CC	Core	Solid State Physics	3	0	1	4	120
CC	Core	Nuclear and Particle Physics	3	1	0	4	120
CC	Core	Mentored Project	0	0	0	4	120
CE/SE	Department	Core Elective - I	3	1	0	4	120
OE/Minor	OE/Minor		3	0	0	3	90
Semester Total						26	780

Semester-7							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
CE/SE	Department	Core Elective - 2	3	1	0	4	120
CE/SE	Department	Core Elective - 3	3	1	0	4	120
CE/SE	Department	Core Elective - 4	3	1	0	4	120
RDIP	Internship /Research / Thesis		0	0	5	5	150
OE/Minor	OE/Minor		3	0	0	3	90
Semester Total						20	600

Semester-8							
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
RDIP	Internship /Research / Thesis	Research Project	0	0	12	12	360
Semester Total						12	360

Core Elective
<ol style="list-style-type: none"> 1. Introduction To Astrophysics 2. Introduction To Soft Matter Physics 3. Numerical Methods and Simulation Techniques 4. Electronic Materials & Device Physics 5. Device Characterization and Instrumentation 6. Introduction To Photonics/Optical Information Processing
7. Introduction to Lab view and Z view
<ol style="list-style-type: none"> 8. Artificial Intelligence in Complex Systems 9. Physics of financial markets 10. Game Theory: Classical & Quantum
<ol style="list-style-type: none"> 11. Battery Materials 12. Battery Design & Testing 13. Beyond Li ion batteries 14. Quantum Algorithms and Complexity 15. Quantum Computation and Error Correction 16. Quantum Optimization
Minor in Quantum Computation
<ol style="list-style-type: none"> 1. Mathematical Foundations 2. Quantum Mechanics 3. Quantum Algorithms and Complexity 4. Quantum Computation and Error Correction 5. Quantum Optimization
Minor in Device Physics
<ol style="list-style-type: none"> 1. Solid State Physics 2. ELECTRONIC MATERIALS & SMART DEVICE 3. Thin film deposition and device fabrication 4. Device characterization and instrumentation 5. Solid State Ionics devices 6. Simulation and Modelling in Solid State Devices
Open Electives
<ol style="list-style-type: none"> 1. Introduction to Astrophysics 2. Quantum Computation 3. Electronic Materials and Smart Devices 4. Quantum Optimization 5. Solid State Ionics devices 6. OPTICAL INFORMATION PROCESSING 7. Thin film deposition and device fabrication