

Course Structure of B. Tech. (Engineering Physics)

Semester I

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.		Mathematics I	IC	2-1-0	3
2.		Engineering Chemistry	IC	2-1-0	3
3.		Makers Lab	IC	3-0-6	6
4.		Data Science/ Analytics/Visualization	IC	2-0-0	2
5.	22BMT922	Management Principles for Engineers*	PL/EAS	3-0-0	3
6.	26PHT102	Applied Optics	PC	3-0-0	3
		Total			20

*To be taught by the Department of Management Studies

Semester II

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.		Mathematics II	IC	2-1-0	3
2.		Python Programming + Lab	IC	2-0-2	3
3.		Environmental Science	IC	1-0-0	1
4.		Soft Skills Foundation Lab	IC	0-0-2	1
5.		Ethics and Human Values	IC	1-0-0	1
6.	26PHP101	Physics Lab	IC	0-0-2	1
7.		Engg. Drawing and Sketching Lab	IC	0-0-2	1
8.	26PHT152	Mathematical Methods in Physics	PC	3-1-0	4
9.	26PHT153	Biophysics	PC	2-0-0	2
10.	26PHT154	Electromagnetic Theory	PC	3-0-0	3
		Total			20

Semester III

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.		Soft Skills Advanced Lab	IC	0-0-2	1
2.		Design thinking for Innovation	IC	2-0-0	2
3.		Engineering Economics	IC	3-0-0	3
4.	26PHT201	Engineering Mechanics and Relativity	PC	2-1-0	3
5.	26PHT202	Foundations of Quantum Theory	PC	3-0-0	3
6.	26PHT203	Physics of Semiconductor Devices	PC	2-0-0	2
7.	26PHT204	Analog and Digital Electronics	PC	3-0-0	3
8.	26PHP201	Analog and Digital Electronics Lab	PC	0-0-6	3
9.		PE 01	PE	3-0-0	3
		Total			23

Semester IV

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.	26PHT251	Thermodynamics and Statistical Mechanics	PC	3-1-0	4
2.	26PHT252	Physics of Energy Materials	PC	3-0-0	3
3.	26PHT253	Laser and Its Applications	PC	2-1-0	3
4.	26PHT254	Optoelectronics	PC	3-0-0	3
5.	26PHP252	Laser and Optoelectronics Lab	PC	0-0-6	3
6.	22MST241	Fundamentals of Materials Science and Engineering #	PL/EAS	3-0-0	3
7.		PE 02	PE	3-0-0	3
		Total			22
	M/H	MINOR / HONOURS COURSE 1			3

To be taught by the Material Research Centre

Semester V

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.	26PHT301	Condensed Matter Physics	PC	3-0-0	3
2.	26PHT302	Numerical Analysis through MATLAB	PC	2-1-0	3
3.	26PHT303	Introduction to Quantum Technologies	PC	3-0-0	3
4.	26PHT304	Thin Film Deposition and Characterization	PC	2-0-2	3
5.	26PHT305	Semiconductor Device Modelling and Simulation	PC	3-0-0	3
6.	26PHP301	Engineering Materials Lab	PC	0-0-6	3
7.		PE 03	PE	3-0-0	3
8.		PE 04	PE	3-0-0	3
		Total			24
	M/H	MINOR / HONOURS COURSE 2			3

Semester VI

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.	26PHT351	Atomic & Molecular Spectroscopy	PC	3-0-0	3
2.	26PHT352	Advanced Computational Tools for Physicists	PC	2-1-0	3
3.	26PHT353	Physics of Nuclear Radiations and Applications	PC	2-1-0	3
4.	26PHP351	Nuclear Radiations and Spectroscopy Lab	PC	0-0-6	3
5.		PE 05	PE	3-0-0	3
6.		PE 06	PE	3-0-0	3
7.		PE 07	PE	3-0-0	3
8.		OE1	OE	3-0-0	3
		Total			24
	M/H	MINOR / HONOURS COURSE 3			3

Semester VII

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.	26PHT401	AI/ML for Physical Systems	PC	2-1-0	3
2.		OE 02	OE	3-0-0	3
3.		PE 08	PE	3-0-0	3
4.		PE 09	PE	3-0-0	3
5.		PE 10	PE	3-0-0	3
6.		Industrial Training/seminar	Industrial T/S		2
7.		Minor Project	Project	0-0-6	3
		Total			20
	M/H	MINOR / HONOURS COURSE 4			3

Semester VIII

S. No.	Course Code	Title of the course	Subject Area	L-T-P	Credits
1.		OE 03	OE	3-0-0	3
3.		Major Project	Project	0-0-12	6
		Total			9
	M/H	MINOR / HONOURS COURSE 5			3

Total Credits: 162

List of Program Electives

S. No.	Program Elective Basket
	Semiconductor & Photonics
1.	Semiconductor Devices and Circuits
2.	Semiconductor Device Processing and IC Fabrication
3.	Semiconductor Devices for Next Generation Field-Effect Transistors
4.	Surface Physics and Engineering
5.	Advanced Micro- and Nanofabrication Technology and Process
6.	Nanophotonics
7.	Advanced Photonic Materials
8.	Medical Applications of Radiation Physics
	Energy Systems
9.	Solar Energy and Physics of Solar Cells
10.	Energy Storage Systems
11.	Hydrogen Energy and Fuel Cells
12.	Physics of Renewable Energy Conversion
13.	Battery Technology and Electric Vehicles
14.	Nuclear Energy Systems and Sustainable Power Generation
	Soft Materials
15.	Engineering Biomaterials
16.	Organic Electronics Material and Devices
17.	Biomaterials and Tissue Engineering
18.	Wearable sensors for healthcare
19.	Nano-engineering of Soft Materials
20.	Soft Materials
	Quantum Science & Technology
21.	Quantum Communication
22.	Quantum Technology Lab
23.	Quantum Sensing and Metrology
24.	Quantum Materials and Devices

25.	Quantum Optics
26.	Foundation of Quantum Computation
27.	Quantum Computing for Physical Systems
	Theoretical Physics
28.	Astronomy and Astrophysics
29.	Advanced Quantum Mechanics for Engineers
30.	Introduction to General Relativity
31.	Group Theory and Applications
32.	Particle Detector and its Technology
33.	Plasma Science and Technology
34.	Accelerators and Applications
35.	Fundamentals of Space Physics and Applications

Honours offered by the Department of Physics

	Advanced Materials Physics
S. No.	Course Name
1.	Advanced Condensed Matter Physics
2.	Advanced Statistical Mechanics
3.	Frontiers in Nanomaterials and Nanotechnology
4.	Advanced Characterization Techniques
5.	Advanced Physics lab

Minor offered by the Department of Physics

	Quantum Technology
S. No.	Course Name
1-4	Any four Courses from the Quantum Science and Technology
5	Mini Project