

Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat
Department of Physics
Five Years Integrated M.Sc. Physics

(Minor modifications as approved as Reso. 4 of 61st Senate of SVNIT dated 30.04.2024)

Sr. No.	Subject	Code	Scheme L-T-P	Credits (Min.)	Notional hours of Learning (Approx.)
First Semester (1st year of MSc)					
1	Waves and Mechanics	PH101	3-1-0	4	70
2	Basic Electronics	PH103	3-0-2	4	85
3	Thermodynamics and Statistical Physics	PH105	3-1-0	4	70
4	Numerical Methods and Computer Programming	PH107	3-0-2	4	85
5	Mathematics for Physical Sciences-I	MA123	3-1-0	4	70
6	Indian Value System and Social Consciousness	HS120	2-0-0	2	35
			Total	22	415
7	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV01 / PHP01	0-0-10	5	200 (20 x 10)
Second Semester (1st year of MSc)					
1	Electromagnetic Theory-I	PH102	3-1-0	4	70
2	Semiconductor physics	PH104	3-0-2	4	85
3	Mathematics for Physical Sciences-II	MA118	3-1-0	4	70
4	Fundamentals of Electrical Engineering	EE110	3-0-2	4	85
5	English and Professional Communication	HS110	3-1-0	4	70
			Total	20	380
6	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV02 / PHP02	0-0-10	5	200 (20 x 10)
Third Semester (2nd year of MSc)					
1	Solid State Physics	PH201	3-0-2	4	85
2	Classical Mechanics	PH203	3-1-0	4	70
3	Optics	PH205	3-0-2	4	85
4	State and Properties of Matter	CY205	3-1-2	5	100
5	Discrete Mathematical Structure	MA205	3-1-0	4	70
			Total	21	410
6	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV03 / PHP03	0-0-10	5	200 (20 x 10)
Fourth Semester (2nd year of MSc)					
1	Mathematical Methods in Physics	PH202	3-1-0	4	70
2	Quantum Mechanics-I	PH204	3-1-0	4	70
3	Electromagnetic Theory-II	PH206	3-0-2	4	85
4	Laser and photonics	PH208	3-1-0	4	70
5	Data Structure	CS102	3-1-2	5	100
			Total	21	395
6	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV04 / PHP04	0-0-10	5	200 (20 x 10)
Fifth Semester (3rd year of MSc)					
1	Quantum Mechanics-II	PH301	3-1-0	4	70

Subject Code: ##nXX; ##: Department Identity, n: Year, XX: Subject Sequence number XX: last digit 0 (subject offered in both ODD and EVEN semesters, XX: 01 to 30 – last digit ODD and EVEN for ODD and EVEN semesters (Mandatory Core), XX: 31 to 50 (Optional Core), XX: 51 to 99 (Elective), Subjects list for Minor and Honor (M/H#1-4), Subjects list for Specialization track (#1-4) EG: Engineering Subject, SC: Science Subject (offered combinedly by departments) (SVNIT Surat)

Curriculum SVNIT Surat (58th Senate, 31 May 2023; Minor modification: 61st Senate, 30 April 2024)

Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat

Department of Physics

Five Years Integrated M.Sc. Physics

2	Atomic and Molecular Physics	PH303	3-1-0	4	70
3	Nuclear Physics	PH305	3-0-2	4	85
4	Elective	PH3AA	3-X-X	3/4	55/70/85
5	Elective	PH3BB	3-X-X	3/4	55/70/85
			Total	18-20	335-395
6	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV05 / PHP05	0-0-10	5	200 (20 x 10)
Sixth Semester (3rd year of MSc)					
1	Plasma Physics	PH302	3-1-0	4	70
2	Elective	PH3CC	3-X-X	3/4	55/70/85
3	Elective	PH3DD	3-X-X	3/4	55/70/85
4	Artificial Intelligence	CS332	3-0-2	4	85
5	Interpretative Molecular Spectroscopy	CY302	3-1-0	4	70
			Total	20	335-395
6	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV06 / PHP06	0-0-10	5	200 (20 x 10)
Seventh Semester (4th year of MSc)					
1	Statistical Mechanics	PH401	3-1-0	4	70
2	Digital Electronics	PH403	3-0-2	4	85
3	Condensed Matter Physics	PH405	3-1-0	4	70
4	Elective	PH4AA	3-X-X	3/4	55/70/85
5	Elective	PH4BB	3-X-X	3/4	55/70/85
			Total	20	335-395
6	Vocational Training / Professional Experience (Optional) (Mandatory for Exit)	PHV07 / PHP07	0-0-10	5	200 (20 x 10)
Eighth Semester (4th year of MSc)					
1	Computational Physics	PH402	3-0-4	5	115
2	Particle Physics	PH404	3-1-0	4	70
3	Elective	PH4CC	3-1-0	4	70
4	Elective	PH4DD	3-X-X	3/4	55/70/85
5	Elective	PH4EE	3-X-X	3/4	55/70/85
			Total	20-21	365-425
Ninth Semester (5th year of MSc)					
1	Dissertation Final (FD)	PHP09	0-0-40	20	800 (20 X 40)
			Total	20	800
Tenth Semester (5th year of MSc)					
1	Dissertation Final (FD)	PHP10	0-0-40	20	800 (20 X 40)
			Total	20	800

Subject Code: ##nXX; ##: Department Identity, n: Year, XX: Subject Sequence number XX: last digit 0 (subject offered in both ODD and EVEN semesters, XX: 01 to 30 – last digit ODD and EVEN for ODD and EVEN semesters (Mandatory Core), XX: 31 to 50 (Optional Core), XX: 51 to 99 (Elective), Subjects list for Minor and Honor (M/H#1-4), Subjects list for Specialization track (#1-4) EG: Engineering Subject, SC: Science Subject (offered combinedly by departments) (SVNIT Surat)

Curriculum SVNIT Surat (58th Senate, 31 May 2023; Minor modification: 61st Senate, 30 April 2024)

Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat
Department of Physics
Five Years Integrated M.Sc. Physics

Sr. No.	Elective	Code	Scheme L-T-P
1	Basic Course on Relativity	PH351	3-1-0
2	Material Science	PH352	3-1-0
3	Basic of Astronomy and Astrophysics	PH353	3-1-0
4	Solar Cell Technology	PH354	3-1-0
5	Nanoscience and Nanotechnology	PH355	3-1-0
6	Electronics and optical communication	PH356	3-1-0
7	Remote sensing	PH357	3-1-0
8	Many Body Physics and Relativistic Quantum Mechanics	PH358	3-1-0
9	Astrophysics and space science	PH451	3-1-0
10	Microprocessor and Microcontrollers	PH452	3-0-2
11	Characterization Techniques	PH453	3-0-2
12	Density Functional Theory	PH454	3-1-0
13	Elementary Excitation in Solids	PH455	3-1-0
14	Green's Function and Partial Differential Equations	PH456	3-1-0
15	Simulations and Modelling	PH457	3-1-0
16	Advanced Crystallography	PH458	3-1-0
17	Electromagnetic Communication	PH459	3-1-0
18	Global Navigation Satellite System	PH460	3-0-2
19	Quantum Field Theory	PH461	3-1-0
20	Thin Films and Vacuum Technology	PH462	3-1-0
21	Nuclear Science and Techniques	PH463	3-0-0
22	Non-Destructive Testing	PH464	3-0-0
13	Microwave Plasma	PH465	3-0-0

Subject Code: ##nXX; ##: Department Identity, n: Year, XX: Subject Sequence number XX: last digit 0 (subject offered in both ODD and EVEN semesters, XX: 01 to 30 – last digit ODD and EVEN for ODD and EVEN semesters (Mandatory Core), XX: 31 to 50 (Optional Core), XX: 51 to 99 (Elective), Subjects list for Minor and Honor (M/H#1-4), Subjects list for Specialization track (#1-4) EG: Engineering Subject, SC: Science Subject (offered combinedly by departments) (SVNIT Surat)

Curriculum SVNIT Surat (58th Senate, 31 May 2023; Minor modification: 61st Senate, 30 April 2024)