

### Course Structure: Five year Integrated M. Sc. in Physics

Semester	Subject code	Subjects	L	T	P	Credit
<b>Third Semester</b>						
<b>3<sup>rd</sup></b>	3MA111	Complex Variables and Partial Differentiation Equation: Mathematics - III	3	1	0	4
	CH106	PHYSICAL CHEMISTRY - I: PHYSICAL PROPERTIES	3	0	0	3
	3CH107	Physical Chemistry Lab – I	0	0	3	1
	3PH163	Mechanics, Waves and Oscillations, Continuum Mechanics	3	1	0	4
	3PH105	Computational Physics - I	3	0	0	3
	3PH106	Computational Physics Lab - I	0	0	3	1
	3PH107	Fundamentals of Bio-sciences	3	0	0	3
	3PH108	Physics Lab – II	0	0	3	1
Semester Total						<b>20</b>
<b>Fourth Semester</b>						
<b>4<sup>th</sup></b>	4MA115	Numerical Technique, Statistical Methods: Mathematics - IV	3	0	0	3
	4MA116	Mathematics – IV Computing Lab	0	0	3	1
	4CH104	Green Technology (Environmental Science)	3	0	0	3
	4PH164	Electricity and Magnetism	3	1	0	4
	4PH110	Quantum Mechanics – I	3	1	0	4
	4PH111	Thermodynamics	3	0	0	3
	4PH114	Advanced Physics Lab - I	0	0	3	1
Semester Total						<b>19</b>
<b>Fifth Semester</b>						
<b>5<sup>th</sup></b>	5PH115	Classical Mechanics	3	1	0	4
	5PH116	Quantum Mechanics – II	3	1	0	4
	5PH117	Mathematical Methods in Physics-I	3	1	0	4
	5PH118	Material Science	3	0	0	3
	5DD1xx	Open Elective	3	0	0	3
	5PH120	Advanced Physics Lab – II	0	0	3	1
Semester Total						<b>19</b>
<b>Sixth Semester</b>						
<b>6<sup>th</sup></b>	6PH121	Statistical Mechanics	3	1	0	4
	6PH122	Mathematical Methods in Physics - II	3	1	0	4
	6PH123	Modern Optics	3	0	0	3
	6PH124	Electronics	3	0	0	3
	6PH125	Condensed Matter Physics	3	0	0	3
	6PH126	Advanced Physics Lab –III	0	0	3	1
	6PH128	Physics Lab – IV (Electronics)	0	0	3	1
	6GE103	Industrial Interaction and Soft Skill Development	0	0	3	0

Semester Total					19	
<b>Summer internship (6 weeks) compulsory and to be done during Summer Vacation and shall be</b>						
<b>Seventh Semester</b>						
7th	7PH131	Computational Physics - II	3	0	0	3
	7PH132	Computational Physics Lab – II	0	0	3	1
	7PH133	Nuclear Physics	3	0	0	3
	7PH134	Atomic and Molecular Spectroscopy	3	0	0	3
	7PH135	Electrodynamics	3	1	0	4
	7PH1xx	Elective – I	3	0	0	3
	7PH138	Advanced Physics Lab – V	0	0	3	1
	7PH192	Industrial Training (4 to 6 weeks after 6th Sem)	0	0	3	1
Semester Total					19	
<b>Eight Semester</b>						
8th	8PH141	Particle Physics	3	0	0	3
	8PH142	Modern Analytical Techniques	3	0	0	3
	8PH143	Material Synthesis	3	0	0	3
	8PH144	Material Synthesis Lab	0	0	3	1
	8PH146	Modelling and Simulation Lab	0	0	3	1
	8PH190	Seminar and Comprehensive Viva-I	0	0	3	1
	8PH149	Advanced Physics Lab – VI	0	0	6	2
	8PH190	Minor Project	0	0	15	5
Semester Total					19	
<b>Ninth Semester</b>						
9th	9PH191	Seminar and Comprehensive Viva - II	0	0	6	2
	9PH192	Thesis (To be contd...)	0	0	54	18
Semester Total					20	
<b>Tenth Semester</b>						
10th	10PH119	Seminar and Comprehensive Viva-III	0	0	6	2
	10PH119	Thesis	0	0	54	18
Semester Total					20	
<b>Grand Total</b>					<b>200</b>	
		<b>List of Electives:</b>				
	PH151	Smart Materials	3	0	0	3
	PH152	Nanotechnology	3	0	0	3
	PH153	Synthesis and Characterization of Functional materials	3	0	0	3
	PH154	Material characterization Techniques	3	0	0	3
	PH155	Ion Beam Patterning and Nano-bio Technology	3	0	0	3
	PH156	Quantum information, computation and Cryptography	3	0	0	3
	PH157	Physics of the Universe	3	0	0	3
	PH158	General Relativity and Black Hole Physics	3	0	0	3
	PH159	Quantum field Theory and its Applications	3	0	0	3

PH160	Advanced Statistical Mechanics	3	0	0	3
PH161	Membrane Separations: Principles, Design and Applications	3	0	0	3
PH162	Electrochemical energy conversion and storage	3	0	0	3

### Common Syllabus: Semester-I and II - Five year Integrated M. Sc. Program

The course structure is same as the general course structure for B. Tech. Program students, and so course contents also remained same. However, the syllabus for CHMICAL SCIENCE I and CHEMICAL SCIENCE LAB I is updated herein, and the same will be pursued for both B. Tech. as well as integrated M.Sc. teaching.