

**Appendix-E**

**PROGRAM CODE :** 311 – Integrated M.Sc. Physics  
**DEPARTMENT :** Department of Physics  
**YEAR :** I

Teaching Scheme				Contact Hours/Week				Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>(Autumn)</b>														
1.	MAN-001	Mathematics - 1	BSC	4	3	1	0	3	0	25	0	25	50	0
2.	PHN-101	Introduction to Physical Science	PCC	2	2	0	0	0	0	0	0	0	100	0
3.	PHN-103	Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	0
4.	CYN-001	Physical Chemistry	BSC	4	3	0	2	3	0	15	25	20	40	0
5.	HSN-002	Ethics and Self Awareness	HSSC	2	1	1	0	2	0	25	0	25	50	0
6.	CEN-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	0	25	50	0
7.	HSN-001A/B	Communication Skills (Basic / Advanced)	HSSC	2	1	0	2	2	0	25	0	25	50	0
		<b>TOTAL</b>		<b>21</b>										
<b>(Spring)</b>														
1.	MAN-102	Linear Algebra	BSC	4	3	1	0	3	0	25	0	25	50	0
2.	PHN-008	Electromagnetic Theory	PCC	4	3	1	0	3	0	25	0	25	50	0
3.	PHN-102	Analog Electronics	PCC	4	3	0	2	3	0	15	25	20	40	0
4.	PHN-104	Mechanics and Relativity	PCC	4	3	1	0	3	0	25	0	25	50	0
5.	EEN-112	Electrical Science	ESC	4	3	1	0	3	0	25	0	25	50	0
6.	CYN-104	General Organic and Inorganic	BSC	4	3	0	2	3	2	15	25	20	40	0

		Chemistry												
		<b>TOTAL</b>		<b>24</b>										

**PROGRAM CODE** : 311 – Integrated M.Sc. Physics  
**DEPARTMENT** : Department of Physics  
**YEAR** : II

Teaching Scheme				Contact Hours/Week				Exam Duration (Hrs.)			Relative Weights (%)			
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>(Autumn)</b>														
1.	MIN-003	Mechanical Engineering Drawing	ESC	4	2	0	4	0	4	0	50	0	0	50
2.	CYN-203	Coordination Chemistry and Organometallics	BSC	4	3	1	0	3	0	25	0	25	50	0
3.	PHN-207	Thermal and Statistical Physics	PCC	4	3	0	2	3	0	15	25	20	40	0
4.	PH-209	Digital Electronics and Circuits	PCC	4	3	0	2	3	0	15	25	20	40	0
5.	PHN-211	Quantum Physics	PCC	3	3	0	0	3	0	25	0	25	50	0
6.	HSN-ELE	HSS Elective Course <sup>1</sup>	HSSMC	3	3	0	0	3	0	25	0	25	50	0
		<b>TOTAL</b>		<b>22</b>										
<b>(Spring)</b>														
1.	PHN-204	Atomic, Molecular and Laser Physics	PCC	3	3	0	0	3	0	25	0	25	50	0
2.	PHN-206	Elements of Condensed Matter Physics	PCC	3	3	0	0	3	0	25	0	25	50	0
3.	PHN-208	Nuclear Physics and Applications	PCC	3	3	0	0	3	0	25	0	25	50	0
4.	PHN-210	Mathematical Physics	PCC	3	3	0	0	3	0	25	0	25	50	0

5.	PHN-212	Applied Optics	PCC	4	3	0	2	3	2	15	25	20	40	0
6.	MTN-105	Electrical and Electronics Materials	ESC	4	3	1	0	3	0	25	0	25	50	0
		<b>TOTAL</b>		<b>20</b>										

**PROGRAM CODE :** 311 – Integrated M.Sc. Physics  
**DEPARTMENT :** Department of Physics  
**YEAR :** III

Teaching Scheme				Contact Hours/Week				Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>(Autumn)</b>														
1.	MAN-205	Ordinary Differential Equations	BSC	4	3	1	0	3	0	25	-	25	50	-
2.	PHN-311	Numerical Analysis and Computational Physics	PCC	3	2	0	2	3	2	15	25	20	40	0
3.	PHN-315	Lasers & Photonics	PCC	3	3	0	0	3	0	25	0	25	50	0
4.	PHN-317	Plasma Physics and Applications	PCC	3	3	0	0	3	0	25	0	25	50	0
6.	PHN-319	Technical Communication	PCC	2	0	0	0		0		50			50
7.	OEC/ BM-ELE	Open Elective Course/Management Studies Elective Course <sup>2</sup>	OEC/HSSMEC	3	2	1	0	2	0	25	0	25	50	-
		<b>TOTAL</b>		<b>18</b>										
<b>(Spring)</b>														
1.	PHN-310	Applied Instrumentation	PCC	3	3	0	2/2	3	-	15	25	20	40	0
2.	PHN-312	Properties of Matter and Acoustic	PCC	4	3	0	3	3	-	15	25	20	40	0
3.	PHN-314	Microprocessors and Peripheral Devices	PCC	4	3	0	2	3	-	15	25	20	40	0
4.	PHN-324	Nanotechnology	PCC	4	3	1	0	3	0	25	0	25	50	0
5.	MAN-302	Mathematical Modeling and Simulation	BSC	4	3	1	0	3	0	25	0	25	50	0
6.	MSC1	Minor Specialization Course- I	MSC	3	0	0	0	0	0	0	0	0	0	0
		<b>TOTAL</b>		<b>19/18</b>										

**PROGRAM CODE :** 311 – Integrated M.Sc. Physics  
**DEPARTMENT :** Department of Physics  
**YEAR :** IV

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>Semester- I (Autumn)</b>														
1.	PH-503	Quantum Mechanics – I	PCC	4	3	1	0	3	0	25	0	25	50	0
2.	PH-505	Advanced Mathematical Physics	PCC	4	3	1	0	3	0	15	0	35	50	0
3.	PH-507	Classical Electrodynamics	PCC	4	3	1	0	3	0	25	0	25	50	0
4.	PH-509	Classical Mechanics	PCC	3	3	0	0	3	0	15	0	35	50	0
5.	PH-513	Semiconductor Devices and Applications	PCC	4	3	0	3	3	3	15	25	20	40	0
6.	MSC2	Minor Specialization Course- II	MSC	4										
		Total		19/ 23										
<b>Semester-II (Spring)</b>														
1.	PH-502	Laboratory Work	PCC	3	0	0	6	0	4	0	50	0	0	50
2.	PH-504	Condensed Matter Physics	PCC	3	3	0	0	3	0	25	-	25	50	-
3.	PH-506	Statistical Mechanics	PCC	3	3	0	0	3	0	25	-	25	50	-
4.	PH-508	Quantum Mechanics - II	PCC	3	3	0	0	3	0	25	-	25	50	-
5.	PH-512	Physics of Earth's Atmosphere	PCC	4	3	1	0	3	0	25	-	25	50	-
6.	PH-518	Elements of Nuclear and Particle Physics	PCC	4	3	1	0	3	0	25	0	25	50	0
7.	MSC3	Minor Specialization Course- III	MSC	4										
		Total		20/ 24										

Program Code: **311 – Integrated M.Sc. Physics**  
 Department: **PH Physics**  
 Year: **V**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>Semester- I (Autumn)</b>														
1.	PH-699	Seminar	SEM	2	0	0	0	0	0	-	-	-	100	-
2.	PH-600A	Dissertation Stage I	DIS	3	0	0	0	0	0	-	-	-	100	0
3.	PHN-xxx	Departmental Elective – I	PEC	4	3	0	3	3	3	20	20	20	40	-
4.	PHN-xxx	Departmental Elective – II	PEC	4	3	1	0	3	0	25	-	25	50	-
5.	PHN-xxx	Departmental Elective – III	PEC	4	3	1	0	3	0	25	-	25	50	-
6.	PHN-xxx	Departmental Elective – IV	PEC	4	3	1	0	3	0	25	-	25	50	-
7.	MSC-4	Minor Specialization Course-IV	MSC	4										
		Total		21/ 25	3	0	2							
<b>Semester-II (Spring)</b>														
1.	PHN-xxx	Departmental Elective – V	PEC	4	3	1	0	3	0	25	-	25	50	-
2.	PHN-xxx	Departmental Elective – VI	PEC	4	3	1	0	3	0	25	-	25	50	-
3.	PH-600B	Dissertation Stage II	DIS	9	0	0	0	0	0	0	0	0	100	0
4.	MSC-5	Minor Specialization Course-V	MSC	4										
		Total		17/ 21										

<b>Year</b>	<b>BSC 16-28</b>	<b>ESC 16</b>	<b>HSSC 10</b>	<b>GSC 03</b>	<b>PCC(+SEM+DIS) 116-124</b>	<b>PEC 24-32</b>	<b>SEM 02</b>	<b>DIS 12</b>	<b>Discipline 02</b>	<b>NCC/NSO /NSS ( 02</b>	<b>NCC/NSO/NSS/ Proficiency 02</b>	<b>Total</b>
<b>1</b>	16	8	4	3	14	-	-	-	-	2	-	<b>47</b>
<b>2</b>	4	8	3	-	27	-	-	-	-	-	-	<b>42</b>
<b>3</b>	4	-	3	-	26	-	-	-	-	-	-	<b>33</b>
<b>4</b>	-	-	-	-	35	-	-	-	-	-	-	<b>35</b>
<b>5</b>	-	-	-	-	-	24	2	12	2	-	2	<b>42</b>
<b>Total</b>	<b>24</b>	<b>16</b>	<b>10</b>	<b>3</b>	<b>102+14=116</b>	<b>24</b>	<b>2</b>	<b>12</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>199</b>

**Program Elective Courses (M.Sc. Physics)**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
<b>Departmental Elective -I (III Semester: One paper to be chosen)</b>														
1.	PHN-601	Advanced Condensed Matter Physics	PEC	4	3	0	3	3	0	20	20	20	40	0
2.	PHN-603	Advanced Atmospheric Physics	PEC	4	3	0	3	3	0	20	20	20	40	0
3.	PHN-605	Advanced Laser Physics	PEC	4	3	0	3	3	0	20	20	20	40	0
4.	PHN-607	Advanced Nuclear Physics	PEC	4	3	0	3	3	0	20	20	20	40	0
<b>Departmental Electives (III Semester: Three paper to be chosen &amp; IV Semester: Two paper to be chosen)</b>														
5.	PHN-602	Nuclear Astrophysics	PEC	4	3	1	0	3	0	25	-	25	50	-
6.	PHN-604	Physics of Nanosystems	PEC	4	3	1	0	3	0	25	-	25	50	-
7.	PHN-606	Superfluidity and Superconductivity	PEC	4	3	1	0	3	0	25	-	25	50	-
8.	PHN-608	Fiber and Nonlinear Optics	PEC	4	3	1	0	3	0	25	-	25	50	-
9.	PHN-610	Quantum Optics	PEC	4	3	1	0	3	0	25	-	25	50	-
10.	PHN-612	Advanced topics in Mathematical Physics	PEC	4	3	1	0	3	0	25	-	25	50	-
11.	PHN-614	Introduction to Superstring theory	PEC	4	3	1	0	3	0	25	-	25	50	-
12.	PHN-616	Advanced Electroceramics Technology	PEC	4	3	1	0	3	0	25	-	25	50	-
13.	PHN-617	Advanced Characterization Techniques	PEC	4	3	1	0	3	0	25	-	25	50	-
14.	PHN-618	Atomic and Molecular Collision Physics	PEC	4	3	1	0	3	0	25	-	25	50	-
15.	PHN-619	A Primer in Quantum Field Theory	PEC	4	3	1	0	3	0	25	-	25	50	-
16.	PHN-620	Advanced Quantum Field Theory	PEC	4	3	1	0	3	0	25	-	25	50	-
17.	PHN-621	Astrophysics	PEC	4	3	1	0	3	0	25	-	25	50	-
18.	PHN-622	Solar Terrestrial Physics	PEC	4	3	1	0	3	0	25	-	25	50	-
19.	PHN-623	General Relativity	PEC	4	3	1	0	3	0	25	-	25	50	-
20.	PHN-624	Computational Nuclear Physics	PEC	4	3	1	0	3	0	25	-	25	50	-
21.	PHN-625	Particle Physics	PEC	4	3	1	0	3	0	25	-	25	50	-
22.	PHN-626	Advanced Atomic and Molecular Physics	PEC	4	3	1	0	3	0	25	-	25	50	-
23.	PHN-627	Quantum Theory of Solids	PEC	4	3	1	0	3	0	25	-	25	50	-
24.	PHN-629	Weather Forecasting	PEC	4	3	1	0	3	0	25	-	25	50	-
25.	PHN-631	Nuclear Instrumentation	PEC	4	3	1	0	3	0	25	-	25	50	-



26.	PHN-633	Physics and Technology of Thin Films	PEC	4	3	1	0	3	0	25	-	25	50	-
27.	PHN-635	Advanced Nuclear reactions	PEC	4	3	1	0	3	0	25	-	25	50	-
28.	PHN-637	Semiconductor Photonics	PEC	4	3	1	0	3	0	25	-	25	50	-
29.	PHN-638		PEC	4	3	1	0	3	0	25	-	25	50	-
30.	PNN-639	Superconducting Radio Frequency for particle accelerators	PEC	4	3	1	0	3	0	25	-	25	50	-