

# **DEPARTMENT OF PHYSICS**

**(DST-FIST and UGC-SAP Sponsored)**

## **SCHOOL OF PHYSICAL, CHEMICAL AND APPLIED SCIENCES**

### **Course Structure**

**M. Sc Integrated (SEM I to SEM X) and M.Sc (SEM I to SEM IV)**



**PONDICHERRY UNIVERSITY  
PUDUCHERRY – 605 014**

**PONDICHERY UNIVERSITY**

*Department of Physics*

**Course Structure -M. Sc Integrated (SEM I to SEM X) and M.Sc (SEM I to SEM IV)**

**Semester – I**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-130	Physics Laboratory-I	HC	2	
2	PHYS-131	Mechanics	HC	3	
3	CHEM100	General Chemistry Laboratory I	HC	2	
4	CHEM101	General Chemistry I	HC	3	
5	ENGL111	Functional English	HC	3	
6	MATH111	Differential Calculus	HC	3	
7	EASC111	Earth and Environment	HC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
8	PHED111	Practical Course in Physical Education	SC	3	

**Semester – II**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-140	Physics Laboratory-II	HC	2	
2	PHYS-141	Thermal Physics and Kinetic Theory	HC	3	
3	CHEM120	General Chemistry Laboratory II	HC	2	
4	CHEM102	General Chemistry II	HC	3	
5	ENGL121	Functional English	HC	3	
6	MATH121	Integral Calculus	HC	3	
7	EASC121	Paleontology	HC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
18	BIOL121	General Biology I	SC	3	

**Semester – III**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-230	Physics Laboratory-III	HC	2	
2	PHYS-231	Oscillations, Waves and Acoustics	HC	3	
3	PHYS-232	Electricity and Magnetism	HC	3	
4	EASC211	Crystallography and Mineralogy	HC	3	
5	MATH231	Multivariable Calculus	HC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
6	CHEM201	Inorganic Chemistry I	SC	3	
7	CHEM241	Physical Chemistry I	SC	3	
8	CHEM200	Chemistry Laboratory III	SC	2	
9	BIOL211	General Biology II	SC	3	
10	EASC212	Structural Geology and Tectonics	SC	3	
11		A Language Course	SC	3	
12		Computer Science Course	SC	3	
13		Mathematics Course	SC	3	
14		Statistics Course	SC	3	

**Semester – IV**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-240	Physics Laboratory-IV	HC	2	
2	PHYS-241	Modern Physics – I	HC	3	
3	PHYS-242	Electric Circuits Theory	HC	3	
4	MATH242	Linear Algebra	HC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
5	CHEM222	Organic Chemistry I	SC	3	
6		A Language Course	SC	3	
7		Computer Science Course	SC	3	
8		Mathematics Course	SC	3	
9		Statistics Course	SC	3	
10		Course from School of Management	SC	3	
11		Course from School of Social Science(Philosophy)	SC	3	
12	CHEM210	Chemistry Laboratory IV	SC	2	
13		Course in Conversational English / Communication Skills	SC	3	

**Semester – V**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-330	Physics Laboratory-V	HC	2	
2	PHYS-331	Classical Optics	HC	3	
3	PHYS-332	Electronic Devices and Circuits	HC	3	
4	PHYS-333	Modern Physics – II	HC	3	
5	MATH351	Elements of Differential Equation	HC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
6	CHEM321	Organic Chemistry II	SC	3	
7	CHEM341	Physical Chemistry II	SC	3	
8		A Language Course	SC	3	
9		Computer Science Course	SC	3	
10		Mathematics Course	SC	3	
11		Statistics Course	SC	3	
12		Course from School of Management	SC	3	
13	EASC313	Geochemistry	SC	3	
14		Course from Center for Electronic Media	SC	3	

**Semester – VI**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-340	Physics Laboratory-VI	HC	2	
2	PHYS-341	Computational Physics	HC	3	
3	PHYS-342	Basics of Materials Science	HC	3	
4	PHYS-343	Modern Optics	HC	3	
5	PHYS-344	Geomagnetism and Paleomagnetism	SC	3	
6	MATH361	Fundamentals Of Complex Analysis	HC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
7	CHEM302	Inorganic Chemistry III	SC	3	
8	CHEM322	Organic Chemistry III	SC	3	
9	CHEM352	Analytical Chemistry	SC	3	
10		A Language Course	SC	3	
11		Computer Science Course	SC	3	
12		Mathematics Course	SC	3	
13		Statistics Course	SC	3	
14		Course from School of Management	SC	3	
15		Course from School of Social Science(Philosophy)	SC	3	
16	EASC321	Geohydrology and Engineering Geology	SC	3	
17	EASC322	Geomorphology and Remote Sensing	SC	3	

**Semester – VII**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-430	Physics Laboratory	HC	2	
2	PHYS-431	Mathematical Methods in Physics – I	HC	4	
3	PHYS-432	Classical Mechanics	HC	4	
4	PHYS-434	Electronic Devices, Circuits	HC	4	
5	PHYS-435	Numerical Methods	SC	3	
6	PHYS-436	UNIX, Fortran 90 and C++	SC	3	
7	PHYS-437	Differential Equations and Transform Techniques	SC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
8	CHEM403	Advanced Inorganic Chemistry I	SC	3	
9	CHEM 422	Advanced Organic Chemistry I	SC	3	
10	CHEM443	Symmetry and Group Theory in Chemistry	SC	3	
11	CHEM463	Quantum Chemistry I	SC	3	
12	EASC415	Basic Geochemistry	SC	3	
13		A Language Course	SC	3	
14		Computer Science Course	SC	3	
15		Mathematics Course	SC	3	
16		Statistics Course	SC	3	
17		Course from School of Management	SC	3	
18		Course from School of Social Science(Philosophy)	SC	3	

**Semester – VIII**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-440	Physics Laboratory	HC	2	
2	PHYS-441	Quantum Mechanics – I	HC	4	
3	PHYS-442	Classical Electrodynamics	HC	4	
4	PHYS-443	Solid State Physics	HC	4	
5	PHYS-444	Nonlinear Dynamics	SC	3	
6	PHYS-445	Measurement Systems and Data Acquisition	SC	3	
7	PHYS-446	Microprocessors and Applications	SC	3	
8	PHYS-447	Basics of Astronomy and Astrophysics	SC	3	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
9	CHEM404	Advanced Inorganic Chemistry II	SC	3	
10	CHEM424	Spectroscopic Identification Of Organic Compounds	SC	3	
11	CHEM444	Statistical Thermodynamics and Reaction Dynamics	SC	3	
12		A Language Course	SC	3	
13		Computer Science Course	SC	3	
14		Mathematics Course	SC	3	
15		Statistics Course	SC	3	
16		Course from School of Management	SC	3	
17		Course from School of Social Science(Philosophy)	SC	3	

**Semester – IX**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-530	Condensed Matter Physics Specialization Experiment	HC	3	
2	PHYS-550	Electronic Specialization Experiment	HC	3	
3	PHYS-570	LASER Specialization Experiment	HC	3	
4	PHYS-531	Quantum Mechanics – II	HC	4	
5	PHYS-532	Atomic and Molecular Physics	HC	4	
6	PHYS-533	Liquid and Polymer Physics	SC	3	
7	PHYS-534	Advanced Electronic Devices and Circuits	SC	3	
8	PHYS-535	Laser Theory	SC	3	
9	PHYS-536	Nonlinear Optics and Materials	SC	3	
10	PHYS-537	Experimental Design	SC	3	
11	PHYS-539	Plasma Physics and Controlled Fusion	SC	3	
12	PHYS-551	Statistical Physics	HC	4	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
13	CHEM544	Spectroscopy: Theory and Applications	SC	3	
14		A Language Course	SC	3	
15		Computer Science Course	SC	3	
16		Mathematics Course	SC	3	
17		Statistics Course	SC	3	
18		Course from School of Management	SC	3	
19		Course from School of Social Science(Philosophy)	SC	3	

**Semester – X**

<i>S. No</i>	<i>Code</i>	<i>Course Name</i>	<i>Type</i>	<i>Credits</i>	<i>Page</i>
1	PHYS-540	Project work	HC	4	
2	PHYS-541	Nuclear Physics	HC	4	
3	PHYS-542	Laser Systems	SC	3	
4	PHYS-543	Physics of Amorphous Materials	SC	3	
5	PHYS-544	Physics of Crystalline Materials	SC	3	
6	PHYS-545	Signal Processing and Communication	SC	3	
7	PHYS-546	Power Electronics and Microcontrollers	SC	3	
8	PHYS-547	Visual Programming (Pre-requisite: PHYS-436)	SC	3	
9	PHYS-548	Quantum Entanglement	SC	3	
10	PHYS-559	Mathematical Methods in Physics-II	HC	4	
<b>Suggested Optional Soft Courses (Outside Department)</b>					
11	CHEM548	Nano-materials and Photo-catalysis	SC	3	
12	CHEM506	Ligand Filed Theory	SC	3	
13	CHEM 546	Electro-Analytical techniques	SC	3	
14	CHEM542	Advanced Magnetic Resonance and Solid State Chemistry	SC	3	
15		A Language Course	SC	3	
16		Computer Science Course	SC	3	
17		Mathematics Course	SC	3	
18		Statistics Course	SC	3	
19		Course from School of Management	SC	3	
20		Course from School of Social Science(Philosophy)	SC	3	