



MIRPUR UNIVERSITY OF SCIENCE & TECHNOLOGY (MUST),

MIRPUR-10250, (AJK)-Pakistan

Department of Physics

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The scheme of studies below will be implemented from Session Fall 2025 and onwards.

Scheme of Studies for BS Physics Program 2025 and onwards

The revised scheme of studies has been shown below in the table. The admission criteria has also been revised in this scheme of studies in line with revised HEC Physics Curriculum 2025.

Component	Details
Degree Title	Bachelor of Science in Physics
Admission criteria	Intermediate or equivalent with physics/mathematics, OR three years engineering diploma. Candidate should have at least 45% marks from an accredited institution with no D-grade in the academic career.
Minimum Credit Hours	136
General Education	34 credit hours (13 courses)
Major	78 credit hours (26 courses)
Interdisciplinary / Allied Courses	18 credit hours (6 courses)
Internship	3 credit hours
Capstone Project	3 credit hours
Program Duration	Minimum: 4 years (8 regular semesters) Maximum: 7 years (14 regular semesters, as per university policy)
Semester Duration	16-18 weeks for regular semesters (1-2 weeks for examination) 8-9 weeks for summer semesters (1 week for examination)
Course Load (per semester)	15-18 credit hours for regular semesters Up-to 8 credit hours for summer semesters (for remedial/deficiency/failure/repetition courses only)
3 Credit Hours (Theory)	3 classes (1 hour each) OR 2 classes (1.5 hour each) OR 1 class (3 hours) per week throughout the semester
1 Credit Hour (Lab / Field Work)	1 credit hour in lab/practical/project requires lab contact of 3 hours per week throughout the semester

The detail of semester wise courses is mentioned below.

Semester-I			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-1101 Introductory Mechanics	2+1	Major
2	MAT-1115 Calculus-I	3+0	Major
3	ENG-1107 Functional English	3+0	General Education
4	QTR-1124 Quantitative Reasoning-I	3+0	General Education
5	CHEM-1104 Inorganic Chemistry	2+1	General Education (Natural Science*)
6	ICT-1126 Applications of Information and Communication Technologies (ICT)	2+1	General Education
Total Credit Hours		18	
Semester-II			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-1202 Waves & Optics	2+1	Major
2	MAT-1215 Calculus-II	3+0	Major
3	ENG-1207 Expository Writing	3+0	General Education
4	PS-1217 Pakistan Studies	2+0	General Education
5	MC-1214 Mass Communication	2+0	General Education (Social Sciences**)
6	ISL-1212 Islamic Studies	2+0	General Education (Ethics in lieu of Islamic Studies only for non-Muslim students)
7	QTR-12 24 Quantitative Reasoning – II	3+0	General Education
Total Credit Hours		18	
Semester-III			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-2303 Heat & Thermodynamics	2+1	Major
2	PHY-2304 Electricity & Magnetism	2+1	Major
3	PHY-2305 Differential Equations in Physics	3+0	Major

4	MAT-2315 Linear Algebra	3+0	Interdisciplinary
5	ARA-2301 Arabic	2+0	General Education (Arts & Humanities***)
6	ICP-2327 Ideology & Constitution of Pakistan	2+0	General Education
Total Credit Hours		16	
Semester-IV			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-2406 Modern Physics	2+1	Major
2	PHY-2407 Vector Calculus	3+0	Major
3	PHY-2408 Classical Mechanics	3+0	Major
4	PHY-2409 Environmental Physics	3+0	Interdisciplinary
5	CCE-2425 Civics & Community Engagement	2+0	General Education
6	ETRE-2408 Entrepreneurship	2+0	General Education
7	UHQ-2430 Understanding of Holy Quran – I	0+1	General Education
Total Credit Hours		17	
Semester-V			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-3510 Electronics – I	2+1	Major
2	PHY-3511 Mathematical Methods of Physics – I	3+0	Major
3	PHY-3512 Electromagnetic Theory	3+0	Major
4	PHY-3513 Medical Physics	3+0	Interdisciplinary
5	PHY-3514 Computational Physics	2+1	Interdisciplinary
6	PHY-3515 Scientific Inquiry & Research Methods	3+0	Interdisciplinary
Total Credit Hours		18	
Semester-VI			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-3616 Electronics – II	2+1	Major
2	PHY-3617 Quantum Mechanics – I	3+0	Major

3	PHY-3618 Mathematical Methods of Physics – II	3+0	Major
4	PHY-3619 Electrodynamics & Special Relativity	3+0	Major
5	PHY-3620 Condensed Matter Physics	3+0	Major
6	UHQ-3630 Understanding of Holy Quran – II	0+1	General Education
Total Credit Hours		16	
Semester-VII			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-4721 Atomic & Molecular Physics	2+1	Major
2	PHY-4722 Quantum Mechanics – II	3+0	Major
3	PHY-4723 Nuclear Physics	3+0	Major
4	PHY-4724 Internship****	3+0	Major
5	PHY-47XX Elective – I *****	3+0	Major
Total Credit Hours		15	
Semester-VIII			
Sr. No.	Courses Titles	Credit Hours	Category
1	PHY-4826 Statistical Mechanics	3+0	Major
2	PHY-4830 Artificial Intelligence in Physics	2+1	Interdisciplinary
3	PHY-4831 Capstone Project	3+0	Major
2	PHY-48XX Elective – II	3+0	Major
3	PHY-48XX Elective – III	3+0	Major
4	PHY-48XX Elective – IV	3+0	Major
5	PHY-4830 Artificial Intelligence in Physics	2+1	Interdisciplinary
6			
Total Credit Hours		18	

*Courses will be offered from the list of natural science courses.

** Courses will be offered from the list of social science courses.

*** Courses will be offered from the list of Arts & Humanities courses.

****Internship will be offered after the fourth regular semester, preferably in summer semesters, however it will be registered and graded in 7th semester.

***** Courses will be offered from the list of Elective courses.

Social Sciences Courses will be opted from the list given in the Table below:

Sr. No.	Course Code	Subject
1	ECO-0006	Economics
2	ETRE-0008	Entrepreneurship
3	HRM-0009	Human Resource Management
4	IR-0010	International Relations
5	ITM-0011	Introduction to Management
6	KS-0013	Kashmir Studies
7	MC-0014	Mass Communications
8	OB-0016	Organizational Behaviour
9	PSY-0019	Introduction to Psychology
10	SOC-0021	Introduction to Sociology
11	CCE-0025	Civics & Community Engagement

List of Elective Courses:

(Here 'XX' represents Course Number. Selection of a course from the list shall be made on the basis of availability of relevant faculty and suitability to the program need)

S. No.	Codes	Title
1.	PHY-47XX	Astro Physics
2.	PHY-47XX	Atomic and Molecular Spectroscopy
3.	PHY-47XX	Computer Simulations in Physics
4.	PHY-47XX	Electronic Materials and Devices
5.	PHY-47XX	Experimental Techniques in Particle and Nuclear Physics
6.	PHY-47XX	Fluid Dynamics
7.	PHY-47XX	Introduction to Materials Science
8.	PHY-47XX	Introduction to Nanotechnology
9.	PHY-47XX	Introduction to Photonics
10.	PHY-47XX	Particle Physics
11.	PHY-48XX	Laser Engineering
12.	PHY-48XX	Laser Physics
13.	PHY-48XX	Methods of Experimental Physics
14.	PHY-48XX	Introduction to Quantum Computing
15.	PHY-48XX	Plasma Physics

16.	PHY-48XX	Quantum Electronics
17.	PHY-48XX	Quantum Field Theory
18.	PHY-48XX	Quantum Information Theory
19.	PHY-48XX	Quantum Optics
20.	PHY-48XX	Research Methodology and Skill Enhancement
21.	PHY-48XX	Semiconductor Physics
22.	PHY-48XX	Surface Science

For other general education courses list provided by the office of Dean FoN&AS will be followed.