

## BS Physics (Specialization in Artificial Intelligence)

Admissions: Fall

Program Duration: 4 years

Total Semesters: 8

Total Credit Hours: 132

### Scheme of Studies:

SEMESTER 1			
Course Code	Course Title	Credit Hour	Course Domain
ENG-501	Functional English	3(3-0)	General Education
PSY-501	Introduction to Psychology	2(2-0)	General Education
MTH-520	Calculus and Analytical Geometry	3(3-0)	Interdisciplinary
ISL-501	Islamic Studies	2(2-0)	General Education
ICT-501	Applications of Information and Communication Technologies	2(2-0)	Interdisciplinary
QRE-501	Quantitative Reasoning-I	3(3-0)	General Education
ICT-501-L	Applications of Information and Communication Technologies Lab	1(0-1)	Interdisciplinary
Total Cr. Hrs. = 16			
SEMESTER 2			
Course Code	Course Title	Credit Hour	Course Domain
ENG-502	Expository Writing	3(3-0)	General Education
ICP-501	Ideology and Constitution of Pakistan	2(2-0)	General Education
QRE-502	Quantitative Reasoning-II	3(3-0)	General Education
ENT-501	Entrepreneurship	2(2-0)	General Education
CCE-501	Civics & Community Engagement	2(2-0)	General Education
PHY-501	Mechanics-1	2(2-0)	Core
PHY-501-L	Mechanics-1 Lab	1(0-1)	Core
Total Cr. Hrs. = 15			
SEMESTER 3			
Course Code	Course Title	Credit Hour	Course Domain
MTH-526	Multivariable Calculus	3(3-0)	Interdisciplinary
ENG-503	Creative Writing	2(2-0)	General Education
PHY-502	Waves and Oscillations	2(2-0)	Core
PHY-503	Electricity and Magnetism-I	3(3-0)	Core
CHEM-510	Introductory Chemistry	3(3-0)	Interdisciplinary
PHY-504	Mechanics-II	3(3-0)	Core
PHY-502-L	Waves and Oscillations Lab	1(0-1)	Core

<b>Total Cr. Hrs. = 17</b>			
<b>SEMESTER 4</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>	<b>Course Domain</b>
PHY-505	Electricity and Magnetism-II	3(3-0)	Core
MTH-514	Differential Equations and Applications	3(3-0)	Interdisciplinary
XXX-XXX	Programming for Artificial Intelligence	2(2-0)	Interdisciplinary
XXX-XXX-L	Programming for Artificial Intelligence Lab	1(0-1)	Interdisciplinary
PHY-507	Heat and Thermodynamics	3(3-0)	Core
PHY-508	Modern Physics	2(2-0)	Core
PHY-508-L	Modern Physics Lab	1(0-1)	Core
MTH-521	Discrete Mathematics	3(3-0)	Interdisciplinary
THQ-501	Teaching of Holy Quran	Non-credit	Compulsory
<b>Total Cr. Hrs. = 18</b>			
<b>SEMESTER 5</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>	<b>Course Domain</b>
PHY-601	Methods of Mathematical Physics-I	3(3-0)	Core
PHY-603	Classical Mechanics	3(3-0)	Core
PHY-605	Electrodynamics-I	3(3-0)	Core
PHY-607	Electronics	3(3-0)	Core
PHY-611	Lab Course (Electromagnetism)	3(3-0)	Core
PHY-XXX	Machine Learning	2(2-0)	Specialized Course
PHY-XXX-L	Machine Learning Lab	1(0-1)	Specialized Course
<b>Total Cr. Hrs. = 18</b>			
<b>SEMESTER 6</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>	<b>Course Domain</b>
PHY-602	Methods of Mathematical Physics-II	3(3-0)	Core
PHY-604	Quantum Mechanics-I	3(3-0)	Core
PHY-606	Nuclear Physics	3(3-0)	Core
PHY-608	Electrodynamics-II	3(3-0)	Core
PHY-XXX	Deep Learning	3(3-0)	Specialized Course
PHY-612	Lab Course (Atomic & Nuclear Physics)	3(3-0)	Core
<b>Total Cr. Hrs. = 18</b>			
<b>SEMESTER 7</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>	<b>Course Domain</b>
PHY-613	Quantum Mechanics-II	3(3-0)	Core
PHY-XXX	Introduction to Robotics	3(3-0)	Specialized Course
PHY-617	Solid State Physics	3(3-0)	Core
PHY-XXX	Senior Project I/Internship	3(3-0)	Compulsory
PHY-XXX	Digital Electronics	2(2-0)	Specialized Course
PHY-XXX-L	Digital Electronics Lab	1(0-1)	Specialized Course

	Translation of holy Quran	0	compulsory
<b>Total Cr. Hrs. = 15</b>			
<b>SEMESTER 8</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>	<b>Course Domain</b>
PHY-XXX	Computational Physics	3(3-0)	Specialized Course
PHY-616	Senior Project II/Internship/Elective	3(3-0)	Compulsory
PHY-620	Statistical Mechanics	3(3-0)	Core
PHY-622	Technical Elective -I	3(3-0)	Specialized Course
PHY-624	Technical Elective -II	3(3-0)	Specialized Course
<b>Total Cr. Hrs. = 15</b>			
<b>Total Credit Hours = 132</b>			

## STRUCTURE

<b>Sr.</b>	<b>Categories</b>	<b>No. of courses</b>	<b>Credit Hours</b>
1.	General Education Course (No Choice)	10	24
2.	Core Courses	20	60
3.	Interdisciplinary Courses	7	21
4.	Specialized Courses	7	21
5.	Compulsory Courses	3	06
	<b>Total</b>	<b>43</b>	<b>132</b>

➤ Total numbers of Credit hours	<b>132</b>
➤ Duration	4 years
➤ Semester duration	16 weeks
➤ Semesters	8
➤ Course Load per Semester	15-18 Cr hr