

Bachelor of Science in Artificial Intelligence (BS AI) Curriculum Plan and Model

Category	No. of Courses	Credit Hours
Mandatory Courses	26	60
Common Optional	9	27
Core	21	47
Deficiency Course	2	6
Research Project	2	6
Total	60	146

Semester 1

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
1	AIN111	Introduction To Information And Communication Technology	3	Mandatory	None
2	AIN111L	Introduction To Information And Communication Technology (Lab)	1	Mandatory	None
3	AIN101	Applied Physics	3	Mandatory	None
4	AIN101L	Applied Physics (Lab)	1	Mandatory	None
5	AIN102	Calculus And Analytical Geometry	3	Mandatory	None
6	HUM111	Functional English	3	Common Optional	None
7	HS102	Islamic Studies	2	Mandatory	None
8	ASC100	Pre - Calculus I (Pre- Medical Only)	3	Deficiency	None
Total (16+3)			19		

Semester 2

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
9	HUM112	Personal Development	3	Common Optional	None
10	AIN131	Programming Fundamentals	3	Mandatory	AIN111 Introduction To Information And Communication Technology
11	AIN131L	Programming Fundamentals (Lab)	1	Mandatory	AIN111L Introduction To Information And Communication Technology (Lab)
12	HUM231	Communication Skills	3	Mandatory	HUM111 Functional English
13	AIN103	Linear Algebra and Differential Equations	3	Mandatory	AIN102 Calculus And Analytical Geometry
14	HS103	Pakistan Studies	2	Mandatory	None
15	ASC101	Pre - Calculus II (Pre- Medical Only)	3	Deficiency	ASC100 Pre - Calculus I
Total (15+3)			18		

Semester 3

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
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16	AIN231	Object Oriented Programming	3	Mandatory	AIN131 Programming Fundamentals
17	AIN231L	Object Oriented Programming (Lab)	1	Mandatory	AIN131L Programming Fundamentals (Lab)
18	AIN221	Operating Systems	3	Mandatory	AIN131 Programming Fundamentals
19	AIN221L	Operating Systems (Lab)	1	Mandatory	AIN131L Programming Fundamentals (Lab)
20	AIN201	Probability & Statistics	3	Common Optional	AIN102 Calculus And Analytical Geometry
21	AIN241	Discrete Structures	3	Mandatory	AIN202
22	AIN202	Multivariate Calculus	3	Mandatory	AIN102
		Total	17		

Semester 4

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
23	AIN232	Data Structure and Algorithms	3	Mandatory	AIN231 Object Oriented Programming
24	AIN232	Data Structure and Algorithms (Lab)	1	Mandatory	AIN231L Object Oriented Programming (Lab)
25	AIN342	Design and Analysis Of Algorithms	3	Mandatory	AIN231 Object Oriented Programming
26	SSC231	World History	3	Common Optional	HUM111 Functional English
27	AIN351	Software Engineering	3	Mandatory	AIN231 Object Oriented Programming
28	AIN203	Applied Statistics	3	Mandatory	AIN201
		Total	16		

Semester 5

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
29	HUM241	World Literature	3	Common Optional	None
30	AIN371	Artificial Intelligence	3	Core	AIN232 Data Structure and Algorithms
31	AIN371	Artificial Intelligence (Lab)	1	Core	AIN232L Data Structure and Algorithms (Lab)
32	AIN261	Data Communication and Computer Network	3	Mandatory	AIN221 Operating Systems
33	AIN261	Data Communication and Computer Network (Lab)	1	Mandatory	AIN221L Operating Systems (Lab)
34	AIN233	Database Management Systems	3	Mandatory	AIN221 Operating Systems
35	AIN233	Database Management Systems (Lab)	1	Mandatory	AIN221L Operating Systems (Lab)
36	AIN372	Continuous and Discrete Optimization	3	Core	AIN103 Linear Algebra and Differential Equations
37	AIN372	Continuous and Discrete Optimization (Lab)	1	Core	AIN103 Linear Algebra and Differential Equations
		Total	19		

Semester 6

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
38	AIN373	Machine Learning	3	Core	AIN371 Artificial Intelligence
39	AIN373L	Machine Learning (Lab)	1	Core	AIN371L Artificial Intelligence (Lab)

40	AIN473	Computer Vision	3	Core	AIN373 Machine Learning
41	AIN473L	Computer Vision (Lab)	1	Core	AIN373L Machine Learning (Lab)
42	HUM121	Academic Writing	3	Common Optional	HUM111 Functional English
43	AIN375	Data Visualization	3	Core	AIN202 Multivariate Calculus, AIN203 Applied Statistics
44	AIN375L	Data Visualization (Lab)	1	Core	AIN202 Multivariate Calculus, AIN203 Applied Statistics
45	AIN331	Parallel and Distributed Computing	3	Core	AIN231 Object Oriented Programming, AIN261 Data Communication and Computer Network
46	AIN331L	Parallel and Distributed Computing (Lab)	1	Core	AIN231L Object Oriented Programming (Lab), AIN261L Data
Total			19		

Semester 7

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
47	AIN471	Final Year Project I	3	Project	AIN351 Software Engineering, AIN373 Machine Learning
48	AIN472	Natural Language Processing	3	Core	AIN373 Machine Learning
49	AIN472	Natural Language Processing (Lab)	1	Core	AIN373L Machine Learning (Lab)
50	AIN374	Logical and Automated Reasoning	3	Core	AIN371 Artificial Intelligence
51	AINXXX	Elective I	3	Core	None
52	HUM233	Philosophy and Critical Thinking	3	Common Optional	None
53	AINXXX	Elective II	3	Core	None
Total			19		

Semester 8

S.No	Code	Title	Cr Hrs	Category	Pre-requisite
54	AINXXX	Elective III	3	Core	None
55	AIN474	Deep Learning	3	Core	AIN373 Machine Learning
56	AIN474	Deep Learning (Lab)	1	Core	AIN373L Machine Learning (Lab)
57	AIN475	Final Year Project II	3	Project	AIN471 Final Year Project I
58	AIN476	Artificial Intelligence for Robotics	3	Core	AIN472 Natural Language Processing, AIN374 Logical and Automated Reasoning
59	HUM113	Sociology	3	Common Optional	None
60	HUM232	Ethics and Social Responsibility	3	Common Optional	None
Total			19		
Total Credit Hours			146		

Elective Courses

S.No	Code	Course(s) Title	Cr Hrs
1	AINX7X	Natural Language Processing	3+0
2	AINX7X	Artificial Intelligence for Robotic System	3+0
3	AINX7X	Security Analysis	3+0
4	AINX7X	Reinforcement Learning	3+0

5	AINX7X	Image Processing & Analysis	3+0
6	AINX7X	Probabilistic Graphical Models	3+0
7	AINX7X	High-Performance Computing	3+0
8	AINX7X	Big Data Analysis	3+0
9	AINX7X	Social Media Mining	3+0
10	AINX7X	Metaheuristic Optimization	3+0
11	AINX7X	Security & Privacy	3+0