

Computer Science HEC-2025 Complete Semester-wise Scheme

Batch: Fall 2026

Semester 1

Code	Subject	Domain	Credit Hours	Pre-requisite
CS101	Programming Fundamentals	Major 1/14	4 (3+1)	
MTH103	IDS 1/4 (Calculus and Analytic Geometry)	IDS 1/4	3 (3+0)	
CS100	Application of Information & Communication Technologies	GE 1/14	3 (2+1)	
MTH102	QR 1/2 (Discrete Structures)	GE 2/14	3 (3+0)	
MGT170	Social Sciences 1/1 (Example: Introduction to Management)	GE 3/14	2 (2+0)	
IRS100	Islamic Studies	GE 4/14	2 (2+0)	
IRS102	Fehem-e-Qruan-I	GE 5(1/2) /14	1 (0+1)	
MTH100	Basic Mathematics (For Pre-Medical)	NIL	NIL	
			18	

Semester 2

Code	Subject	Domain	Credit Hours	Pre-requisite
CS102	Object Oriented Programming	Major 2/14	4 (3+1)	Programming Fundamental
CS300	Database Systems	Major 3/14	4 (3+1)	
MTH210	IDS 2/4 (Linear Algebra)	IDS 2/4	3 (3+0)	CAG
IRS201	Fehem-e-Qruan-II	GE 5(1/2) /14	1 (0+1)	
ECON100	IDS 3/4 (Basic Economics)	IDS 3/4	3 (3+0)	
ENG100	Functional English	GE 6/14	3 (3+0)	
ELM100	Elementary Mathematics (For Pre-Medical)	NIL	NIL	
			18	

Semester 3

Code	Subject	Domain	Credit Hours	Pre-requisite
CS211	Digital Logic Design	Major 4/14	4 (3+1)	
CS402	Information Security	Major 5/14	3 (2+1)/ 3 (3+0)	
CS301	Software Engineering	Major 6/14	3 (3+0)	
CS140	Natural Sciences (Applied Physics)	GE 7/14	3 (2+1)	
PS100	Pakistan Studies	GE 8/14	2 (2+0)	
ENG102	Expository Writing	GE 9/14	3 (3+0)	Functional English
			18	

Semester 4

Code	Subject	Domain	Credit Hours	Pre-requisite
CS200	Data Structures	Major 7/14	4 (3+1)	OOP
CS210	Computer Organization & Architecture	Major 8/14	3 (2+1)	DLD
MGT173	Arts & Humanities (Professional Ethics)	GE 10/14	2 (2+0)	
MGT171	Entrepreneurship	GE 11/14	2 (2+0)	
PS103	Ideology and Constitution of Pakistan	GE 12/14	2 (2+0)	
SOC102	Civics and Community Engagement	GE 13/14	2 (2+0)	
IRS120	Seerat un Nabi	GE	2 (2+0)	
			17	

Semester 5

Code	Subject	Domain	Credit Hours	Pre-requisite
CS212	Theory of Automata	Major 9/14	3 (3+0)	
CS202	Operating Systems	Major 10/14	4 (3+1)	
CS312	Artificial Intelligence	Major 11/14	3 (2+1)/ 3 (3+0)	
---	Specialization Electives 1/8	SE1/8	3 Cr. Hr.	
---	Specialization Electives 2/8	SE2/8	3 Cr. Hr.	
			16	

Semester 6

Code	Subject	Domain	Credit Hours	Pre-requisite
CS302	Computer Networks	Major 12/14	3 (2+1)/ 3 (3+0)	
CS126	IDS 4/4 (Technical & Business Writing)	IDS 4/4	3 (3+0)	
---	Specialization Electives 3/8	SE3/8	3 Cr. Hr.	
---	Specialization Electives 4/8	SE4/8	3 Cr. Hr.	
---	Specialization Electives 5/8	SE5/8	3 Cr. Hr.	
			15	

Summer Semester

Code	Subject	Domain	Credit Hours	Pre-requisite
CS411	Internship (3 Cr. Hr.)	Internship	3 Cr. Hr.	

Semester 7

Code	Subject	Domain	Credit Hours	Pre-requisite
CS400	Final Year Project - I	FYP (1/2)	3 Cr. Hr.	
CS311	Design and Analysis of Algorithms	Major 13/14	3 (3+0)	Data Structures
---	Specialization Electives 6/8	SE6/8	3 Cr. Hr.	
---	Specialization Electives 7/8	SE7/8	3 Cr. Hr.	
---	Professional Certification	Certification	3 Cr. Hr.	
			15	

Semester 8

Code	Subject	Domain	Credit Hours	Pre-requisite
CS401	Final Year Project - II	FYP (2/2)	3 Cr. Hr.	FYP-1
CS423	Cloud Computing	Major 14/14	3 (2+1)/ 3 (3+0)	
STAT202	QR 2/2 Probability & Statistics	GE 14/14	3 (3+0)	
---	Specialization Electives 8/8	SE8/8	3 Cr. Hr.	
			12	

1. GE (14 Courses = 34 Credit Hours) - General Education
2. Major (14 Courses=48 Credit Hours): Major Courses (Compulsory)
3. SE (08 courses = 24 credit hours): Specialization Electives
4. Professional Certification (03 credit hours)
5. IDS (04 courses = 12 credit hours): Interdisciplinary/ Allied Courses
6. Field Experience/Internship (03 credit hours)
7. Capstone Project / FYP (06 credit hours)

Specialization Electives: Computer Science

Code	Subject	Domain	Credit Hours	Pre-requisite
SE313	Web Engineering	SE 1/8	3 (2+1)	
SE210	HCI & Computer Graphics	SE 2/8	3 (2+1)	
CS421	Mobile Application Development	SE 3/8	3 (2+1)	
CS422	Internet of Things	SE 4/8	3 (3+0)	
CS310	Compiler Construction	SE 5/8	3 (2+1)	Theory of Automata
CS424	Visual Programming	SE 6/8	3 (2+1)	OOP
CS410	Parallel & Distributed Computing	SE 7/8	3 (2+1)/ 3 (3+0)	Operating Systems
SE314	Software Testing & Quality Assurance	SE 8/8	3 (2+1)	

Specialization Electives: Software Engineering

Code	Subject	Domain	Credit Hours	Pre-requisite
SE211	Software Requirement Engineering	SE 1/8	3 (3+0)	
SE410	Software Project Management	SE 2/8	3 (3+0)	
SE312	Software Re-Engineering	SE 3/8	3 (2+1)/ 3 (3+0)	
SE212	Software Design and Architecture	SE 4/8	3 (3+0)	
CS410	Parallel and Distributed Computing	SE 5/8	3 (2+1)/ 3 (3+0)	Operating Systems
SE310	Software Construction and Development	SE 6/8	3 (2+1)/ 3 (3+0)	
SE210	Human Computer Interaction	SE 7/8	3 (2+1)/ 3 (3+0)	
AI312	Machine Learning	SE 8/8	3 (2+1)	

Specialization Electives: Artificial Intelligence

Code	Subject	Domain	Credit Hours	Pre-requisite
AI313	Computer Vision	SE 1/8	3 (2+1)	
AI311	Knowledge Representation and Reasoning	SE 2/8	3 (2+1)/ 3 (3+0)	
AI210	Programming for AI	SE 3/8	3 (2+1)	AI
AI312	Machine Learning	SE 4/8	3 (2+1)	
AI314	Natural Language Processing	SE 5/8	3 (2+1)/ 3 (3+0)	
AI321	Deep Learning	SE 6/8	3 (2+1)/ 3 (3+0)	
AI315	Data Mining	SE 7/8	3 (2+1)/ 3 (3+0)	
AI410	Speech Processing	SE 8/8	3 (2+1)/ 3 (3+0)	