FACULTY OF COMPUTING AND ENGINEERING SCIENCES

BS Computer Science

The program is offered through a well-trained and qualified faculty. It consists of 44 courses (five/six courses per semester) with a total of 130 credit hours. BSCS Program is accredited by NCEAC, HEC, Pakistan. The maximum time to complete the degree is six years.

BS (Computer Science) COURSE PLAN (ROADMAP)

Sem.	Codes	Course Title	Cr.Hrs.		Pre-Req.
		First Year			
		First Semester			
1	CSC 1101	Calculus and Analytical Geometry	3, 0	3	
	CSC 1102	English Composition and Comprehension	3, 0	3	
	CSC 1103	Fundamentals of Programming	3, 0	3	
	CSCL 1103	Lab : Fundamentals of Programming	0, 1	1	
	CSC 1107	Applied Physics	2, 0	2	
	CSCL 1107	Lab : Applied Physics	0, 1	1	
	CSC 1108	Introduction to Computer Science	2, 0	2	
	CSCL 1108	Lab : Introduction to Computer Science	0, 1	1	
			16		
		Second Semester			
2	CSC 1207	Digital Logic Design	2, 0	2	
	CSCL 1207	Lab: Digital Logic Design	0, 1	1	
	CSC 1208	Object Oriented Programming Techniques	3, 0	3	CSC 1103, CSCL 1103
	CSCL 1208	Lab: Object Oriented Programming Techniques	0, 1	1	CSC 1103, CSCL 1103
	CSC 1206	Probability and Statistics	3, 0	3	
	CSC 1209	Islamic Studies/ Humanities	2, 0	2	
	CSC 1211	Ideology and Constitution of Pakistan	2,0	2	
	CSC 2101	Communication and Presentation Skills	3, 0	3	CSC 1102
			17		
		Second Year			
		Third Semester			
3	CSC 1201	Discrete Mathematical Structures	3, 0	3	
	CSC 1202	Multivariate Calculus	3,0	3	CSC 1101
	CSC 2102	Data Structures and Algorithms	3, 0	3	CSC 1208, CSCL 1208
	CSCL 2102	Lab: Data Structures and Algorithms	0, 1	1	CSC 1208, CSCL 1208
	CSC 3105	Computer Organization and Assembly Language	2, 0	2	CSC 1207, CSCL 1207
	CSCL 3105	Lab: Computer Organization and Assembly Language	0, 1	1	CSC 1207, CSCL 1207
	CSC 3106	HCI & Computer Graphics	2, 0	2	
	CSCL 3106	Lab: HCI & Computer Graphics	0, 1	1	
	CSC xxxx	University Elective-1	2, 0	2	
			18		
		Fourth Semester			
4	CSC 2203	Database Systems	3, 0	3	CSC 2102, CSCL 2102
	CSCL 2203	Lab: Database Systems	0, 1	1	CSC 2102, CSCL 2102
	CSC 2204	Finite Automata Theory and Formal Languages	3, 0	3	
	CSC 2206	Linear Algebra	3, 0	3	
	CSC 3101	Computer Architecture	3,0	3	CSC 3105, CSCL 3105
	CSC 3202	Design and Analysis of Algorithms	3, 0	3	CSC 2102, CSCL 2102
			16		

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Sem.	Codes	Course Title	Cr.Hrs.		Pre-Req.
		Third Year			
		Fifth Semester			
5	CSC 3107	Operating Systems	2, 0	2	
	CSCL 3107	Lab: Operating Systems	0, 1	1	
	CSC 3108	Advance Database Management Systems	2, 0	2	CSC 2203, CSCL 2203
	CSCL 3108	Lab: Advance Database Management Systems	0,1	1	CSC 2203, CSCL 2203
	CSC 3109	Software Engineering	3, 0	3	
	CSC 3201	Compiler Construction	3, 0	3	CSC 2204
	CSC 3110	Civics and Community Engagement	2, 0	2	
	CSC 3111	Entrepreneurship	2,0	2	
				16	
		Sixth Semester			
6	CSC 1205	Technical and Business Writing	3,0	3	CSC 1102
	CSC 3206	Artificial Intelligence	2, 0	2	
	CSCL 3206	Lab: Artificial Intelligence	0, 1	1	
	CSC 3209	Computer Networks	2, 0	2	
	CSCL 3209	Lab: Computer Networks	0, 1	1	
	CSC xxxx	CS Elective-1	3, 0	3	
	CSC xxxx	CS Elective-2	3, 0	3	
				15	
		Fourth Year			
		Seventh Semester			
7	CSC 4105	Final Year Project-I	0, 3	3	
	CSC 4107	Information Security	2, 0	2	
	CSCL 4107	Lab: Information Security	0, 1	1	
	CSC 4109	Professional Practices	2, 0	2	
	CSC xxxx	CS Elective-3	3, 0	3	
	CSC xxxx	CS Elective-4	3, 0	3	
	CSC xxxx	University Elective-2	3, 0	3	
				17	
		Eighth Semester			
8	CSC 4106	Parallel and Distributed Computing	3,0	3	CSC 3107, CSCL3107
	CSC 4205	Final Year Project-II	0, 3	3	CSC 4105
	CSC xxxx	CS Elective-5	3, 0	3	
	CSC xxxx	CS Elective-6	3, 0	3	
	CSC xxxx	CS Elective-7	3, 0	3	
				15	
				130	

All the undergraduate students will be required to complete the non-credit course CSC 1215 Teachings of the Holy Quran, to qualify for the degree.

Two deficiency courses of Mathematics will be offered to the students having limited mathematical background, as identified by the relevant PM.

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CS ELECTIVES

CSC 4703	Applied Data Mining
CSC 4706	Digital Image Processing
CSC 4708	Enterprise Resource Planning
CSC 4712	IT Innovations
CSC 4714	Network Security and Encryption
CSC 4716	Switching and Routing
CSC 4717	Web Technologies-I
CSC 4718	Wireless and Mobile Technologies
CSC 4719	Game Development
CSC 4721	Introduction to Cloud Computing
CSC 4722	Introduction to Blockchain Technology
CSC 4723	Blockchain and Smart Contract Development
CSC 4724	User Interface Design
CSC 4725	Introduction to Development and Operations
CSC 4726	Systems and Network Administration
CSC 4727	Hybrid Mobile Application Development
CSC 4802	Android Application Development
CSC 4803	Auditing Information Systems
CSC 4805	Data and Network Security
CSC 4806	Digital Signal Processing
CSC 4807	Embedded Programming
CSC 4808	Ethical Hacking
CSC 4809	iOS Development
CSC 4812	Mechatronics
CSC 4813	Modeling and Simulation
CSC 4814	Software Project Management
CSC 4815	Software Engineering-II
CSC 4816	Technopreneurship
CSC 4817	Web Technologies-II
CSC 4823	Interaction Design
CSC 4824	Embedded Systems
CSC 4825	Computer Graphics
CSC 4826	Introduction to Data Science
CSC 4827	Software Quality Engineering and Testing
CSC xxxx	AI in Game Development
CSC xxxx	No Code Programming
CSC xxxx	Virtual and Augmented Reality

UNIVERSITY ELECTIVE SUPPORTING

Each campus may offer electives as per convenience and availability of resources. The Electives being offered at Islamabad Campus are as follows:

CSC 4501	Business and Technology Ethics
CSC 4502	Design and Creativity
CSC 4503	Introduction to Accounting
CSC 4504	Organizational Behavior
CSC 4601	Foreign Languages
CSC 4602	History of Scientific Ideas
CSC 4603	Management Principles
CSC 4604	Research Report
CSC 4605	Sociology
CSC 4606	Psychology

DISTRIBUTION OF CREDIT HOURS

Areas	Cr. Hrs.	Courrses
Computing Core	46	14
Domain Core	18	6
Domain Elective	21	7
Mathematics and Supporting Courses	12	4
Elective Supporting Courses	03	1
General Education Requirement	30	12
Total	130	44

All courses may not be offered in every semester. Elective courses may vary from time to time. Alternative courses may be substituted as and when required. Internship The internship is scheduled at the end of the third year.

After completing the six-week internship, all students must submit a comprehensive report, giving details of their experience and learning.