

COMSATS University Islamabad
Registrar Office, Principal Seat, Islamabad

Scheme of Studies of Bachelor of Science in Software Engineering for Spring 2025

1. Minimum Duration:	4 Years
2. Minimum Semesters:	8
2. Maximum Duration:	6 Years
4. Maximum Semesters:	12

Course Work	<u>Min No. of Courses</u>	<u>Min No. of Credit Hrs</u>
1 a. General Education Courses:	12	30
2 i. Computing Core (Mandatory courses)	12	40
3 ii. Domain Core (Mandatory courses)	06	18
4 iii. Domain Elective (any Seven courses from the following list)	07	21
5 c. Interdisciplinary/Allied Courses:	05	15
6 d. Field Experience/Internship:	01	03
7 e. Capstone Project	02	06

Note:

- Students are required to complete their academic programs in strict adherence to the applicable and officially notified Schemes of Studies (SoS). All updated rules, regulations, and policies, as periodically amended, shall be enforced.
- Prior to course registration, the Campus Registration Office must conduct a thorough consolidation and comparison between the hard copies of the signed notifications of the applicable Scheme of Studies and the versions uploaded on CU Online. This verification process must be completed before courses are made available for student registration, ensuring the elimination of any discrepancies or errors in the SoS or during the registration process. Should any discrepancies or mismatches be identified between the hard copy of the signed notifications and the SoS on CU Online, it must be got corrected from Registration Office, PS on the CU Online SoS to align with the officially signed hard copy prior to course offering.
- This procedure is designed to address and rectify potential issues at the course registration stage, thereby preventing complications during the awarding of degrees or the issuance of Final Result Notifications (FRNs) at CUI System. In the event that any course is registered with incorrect details, the responsibility will lie with the concerned campus course registration office, and appropriate corrective actions will be enforced.

5. Capstone Project

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
1	CSE498	Final Year Project I	2(0, 2)		CSC241 ,CSC270 ,CSC291
2	CSE499	Final Year Project II	4(0, 4)		CSE498

Application of Information and Communication Technologies (Mandatory course) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
3	CSC101	Applications of Information and Communication Technologies	3(2, 1)		

Arts and Humanities (Mandatory course) /

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
4	ADA111	History and Theory of Art and Culture I	2(2, 0)		
5	ARC108	Art Appreciation	2(2, 0)		
6	ARC351	Calligraphic Arts	2(2, 0)		
7	CSC210	Professional Practices	2(2, 0)		
8	HUM310	Islamic History	2(2, 0)		

B. List of Interdisciplinary Courses (Mandatory courses) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
9	-	*Supporting Elective Courses	3(3, 0)		
10	HUM121	Technical and Business Writing	3(3, 0)		
11	MTH105	Multivariable Calculus	3(3, 0)		MTH104
12	MTH231	Linear Algebra	3(3, 0)		
13	MTH262	Statistics and Probability Theory	3(3, 0)		

Civics and Community Engagement (Mandatory course) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
14	HUM208	Civics and Community Engagement	2(2, 0)		

Deficiency Courses (only for Pre-Medical Students)

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
15	MTH091	Pre-Calculus I	3(3, 0)		
16	MTH092	Pre-Calculus II	3(3, 0)		

Entrepreneurship (Mandatory course) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
17	MGT250	Introduction to Entrepreneurship	2(2, 0)		

Expository Writing (Mandatory Course) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
18	HUM120	Expository Writing	3(3, 0)		

Functional English (Mandatory Course) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
19	HUM104	Functional English	3(3, 0)		

i. Computing Core (Mandatory courses) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
20	CSC103	Programming Fundamentals	4(3, 1)		
21	CSC211	Data Structures	4(3, 1)		CSC103
22	CSC232	Information Security	3(2, 1)		
23	CSC241	Object Oriented Programming	4(3, 1)		CSC103
24	CSC262	Artificial Intelligence	3(2, 1)		
25	CSC270	Database Systems	4(3, 1)		
26	CSC275	Computer Networks	3(2, 1)		
27	CSC291	Software Engineering	3(3, 0)		
28	CSC301	Design and Analysis of Algorithms	3(3, 0)		CSC211
29	CSC323	Operating Systems	3(2, 1)		
30	CSC325	Computer Organization and Assembly Language	3(2, 1)		EEE240
31	EEE240	Fundamentals of Digital Logic Design	3(2, 1)		

Ideology and Constitution of Pakistan (Mandatory course) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
32	HUM113	Ideology and Constitution of Pakistan	2(2, 0)		

ii. Domain Core (Mandatory courses) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
33	CSC334	Parallel and Distributed Computing	3(2, 1)		CSC323
34	CSE302	Software Quality Engineering	3(2, 1)		CSC291
35	CSE303	Software Design and Architecture	3(3, 0)		CSC291
36	CSE305	Software Requirement Engineering	3(3, 0)		CSC291
37	CSE325	Software Construction and Development	3(2, 1)		CSE303
38	CSE494	Software Project Management	3(2, 1)		CSC291

iii. Domain Elective (any Seven courses from the following list)

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
39	AIC354	Machine Learning Fundamentals	3(2, 1)		
40	CSC303	Mobile Application Development	3(2, 1)		CSC241
41	CSC316	Advance Database Systems	3(2, 1)		CSC270
42	CSC331	Digital Image Processing	3(2, 1)		
43	CSC336	Web Technologies	3(2, 1)		CSC241
44	CSC337	Advanced Web Technologies	3(2, 1)		CSC336
45	CSC353	Computer Graphics	3(2, 1)		
46	CSC365	HCI and Computer Graphics	3(2, 1)		
47	CSC412	Advanced Programming	3(2, 1)		CSC241
48	CSC417	E-Commerce and Digital Marketing	3(2, 1)		
49	CSC418	DevOps for Cloud Computing	3(2, 1)		
50	CSC454	Pattern Recognition	3(3, 0)		
51	CSC471	Distributed Database Systems	3(3, 0)		CSC270
52	CSC495	Game Development	3(2, 1)		CSC241
53	CSE300	Software Metrics	3(3, 0)		CSC291
54	CSE327	Software Re-Engineering	3(3, 0)		CSC291
55	CSE331	Software Engineering Economics	3(3, 0)		
56	CSE332	Information System Audit	3(3, 0)		
57	CSE333	Software Process Improvement	3(3, 0)		
58	CSE334	Reverse Engineering of Source Code	3(2, 1)		
59	CSE343	Agile Software Development	3(3, 0)		
60	CSE350	Topics in Software Engineering I	3(3, 0)		
61	CSE354	Design Patterns	3(2, 1)		
62	CSE360	Software Safety Critical Systems	3(3, 0)		
63	CSE361	Software Fault Tolerance	3(3, 0)		
64	CSE482	Automated Software Testing	3(2, 1)		
65	CSE483	Topics in Software Engineering II	3(3, 0)		
66	DSC293	Data Science Fundamentals	3(2, 1)		
67	DSC306	Data Mining	3(2, 1)		
68	DSC327	Data Visualization Techniques	3(2, 1)		
69	DSC354	Data Warehousing and Business Intelligence	3(2, 1)		CSC270

Internship (Mandatory courses) /

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
70	CSE395	Field Experience/Internship	3(0, 3)		

Islamic Studies (Mandatory course. HUM116 Ethics is only for Non-Muslims Students) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
71	HUM112	Islamic Studies	2(2, 0)		
72	HUM116	Ethics	2(2, 0)		

List of Supporting Elective Courses (Any one course for Supporting Elective Courses) :

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
73	ECO484	Project Planning and Monitoring	3(3, 0)		
74	HUM220	Introduction to Psychology	3(3, 0)		
75	HUM221	International Relations	3(3, 0)		
76	HUM430	French	3(3, 0)		
77	HUM431	German	3(3, 0)		
78	HUM432	Arabic	3(3, 0)		
79	HUM434	Chinese	3(3, 0)		
80	MGT131	Financial Accounting	3(3, 0)		
81	MGT210	Fundamentals of Marketing	3(3, 0)		

82	MGT350	Human Resource Management	3(3, 0)		
83	MGT513	New Product Development	3(3, 0)		
Natural Sciences (any one course from the following list) :					
	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
84	BIO100	Fundamentals of Biology	3(2, 1)		
85	BIO310	Introduction to Bioinformatics	3(2, 1)		
86	BIO321	Fundamentals of Genetics	3(2, 1)		
87	CHM100	Introduction to Chemistry	3(2, 1)		
88	PHY124	Applied Physics	3(2, 1)		
Quantitative Reasoning (Mandatory courses) /					
	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
89	CSC102	Discrete Structures	3(3, 0)		
90	MTH103	Exploring Quantitative Skills	3(3, 0)		
91	MTH104	Calculus and Analytic Geometry	3(3, 0)		
92	MTH114	Tools for Quantitative Reasoning	3(3, 0)		
Social Sciences (any one course from the following list) :					
	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
93	HUM122	Fundamentals of Psychology	2(2, 0)		
94	HUM130	Fundamentals of Sociology	2(2, 0)		
95	HUM131	Anthropology	2(2, 0)		
96	HUM209	Fundamentals of Political Science	2(2, 0)		
97	HUM222	Fundamentals of International Relations	2(2, 0)		

Note:

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