

COMSATS University Islamabad
Registrar Office, Principal Seat, Islamabad

Scheme of Studies of Bachelor of Science in Software Engineering for Spring 2021

1. Minimum Duration: 04 Years
2. Minimum Semesters: 08
2. Maximum Duration: 0 Years
4. Maximum Semesters: 0 Years
3. No. of Credit Hours in each Semester: 12 - 21

Course Work	<u>Min No. of Courses</u>	<u>Min No. of Credit Hrs</u>
1 Elective Courses	04	12
2 Total Credit Hours of course work		24
3 MS Thesis		06

Total No. of Courses of the Program: 42

Total No. of Credit Hours of the Program: 133

Note:

The Regulations relating to UnderGraduate Degree Program approved by the Competent Authority and amended from time to time shall also be applicable to this program.

List of Core Courses:

Currently there is no data available.

Computing Core Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
1	CSC101	Introduction to ICT	3(2, 1)		
2	CSC102	Discrete Structures	3(3, 0)		
3	CSC103	Programming Fundamentals	4(3, 1)		
4	CSC211	Data Structures and Algorithms	4(3, 1)		CSC103
5	CSC241	Object Oriented Programming	4(3, 1)		CSC103
6	CSC322	Operating Systems	3(2, 1)		CSC211
7	CSC339	Data Communications and Computer Networks	3(2, 1)		
8	CSC356	Human Computer Interaction	3(2, 1)		
9	CSC371	Database Systems I	4(3, 1)		CSC241
10	CSC432	Information Security	3(3, 0)		
11	CSE291	Introduction to Software Engineering	4(3, 1)		
12	CSE498	Senior Design Project I	2(0, 2)		CSC241 ,CSC371 ,CSE291 ,HUM102
13	CSE499	Senior Design Project II	4(0, 4)		CSE498
14	EEE241	Digital Logic Design	4(3, 1)		

Computing General Education Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
15	CSC110	Professional Practices for IT	3(3, 0)		
16	HUM100	English Comprehension and Composition	3(3, 0)		
17	HUM102	Report Writing Skills	3(3, 0)		HUM100
18	HUM103	Communication Skills	3(3, 0)		HUM100
19	HUM110	Islamic Studies	3(3, 0)		
20	HUM111	Pakistan Studies	3(3, 0)		
21	HUM114	Ethics	3(3, 0)		

Computing Supporting Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
22	EEE121	Electric Circuits Analysis I	4(3, 1)		
23	MTH104	Calculus and Analytic Geometry	3(3, 0)		
24	MTH231	Linear Algebra	3(3, 0)		
25	MTH262	Statistics and Probability Theory	3(3, 0)		

CS and SE Elective Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
26	CSC321	Microprocessor and Assembly Language	3(2, 1)		EEE241
27	CSC331	Digital Image Processing	3(3, 0)		MTH231
28	CSC334	Parallel and Distributed Computing	3(2, 1)		CSC103
29	CSC347	Computational Intelligence	3(3, 0)		CSC241
30	CSC402	Database Systems II	3(3, 0)		CSC371

31	CSC412	Visual Programming	3(2, 1)		CSC241
32	CSC417	E-Commerce and Digital Marketing	3(2, 1)		
33	CSC418	DevOps for Cloud Computing	3(2, 1)		
34	CSC430	Wireless Networks	3(2, 1)		CSC339
35	CSC432	Information Security	3(3, 0)		CSC339
36	CSC443	Scripting Languages	3(2, 1)		CSC241
37	CSC451	Introduction to Modeling and Simulation	3(2, 1)		CSC211
38	CSC454	Pattern Recognition	3(3, 0)		CSC354
39	CSC455	Computer Vision	3(3, 0)		MTH231
40	CSC461	Introduction to Data Science	3(3, 0)		MTH262
41	CSC462	Artificial Intelligence	3(2, 1)		CSC102
42	CSC471	Distributed Database Systems	3(3, 0)		CSC371
43	CSC482	Systems and Networks Administration	3(2, 1)		CSC339
44	CSC495	Game Development	3(2, 1)		CSC241
45	CSE300	Software Metrics	3(3, 0)		CSE291
46	CSE325	Software Construction and Development	3(3, 0)		
47	CSE327	Software Re-Engineering	3(3, 0)		
48	CSE330	E-Commerce	3(2, 1)		
49	CSE331	Software Engineering Economics	3(3, 0)		
50	CSE332	Information System Audit	3(3, 0)		
51	CSE333	Software Process Improvement	3(3, 0)		
52	CSE334	Reverse Engineering of Source Code	3(2, 1)		
53	CSE350	Topics in Software Engineering I	3(3, 0)		
54	CSE354	Design Patterns	3(2, 1)		
55	CSE356	Formal Methods	3(3, 0)		CSE291
56	CSE483	Topics in Software Engineering II	3(3, 0)		

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Elective Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
57	MTH100	Mathematics I	3(3, 0)		
58	MTH101	Calculus I	3(3, 0)		

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Enterprise Security Architecture

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
59	CSC433	Cryptography and Network Security	3(3, 0)		CSC339

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Information Systems and Data Processing

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
60	CSC354	Machine Learning	3(3, 0)		
61	CSC496	Data Warehousing and Data Mining	3(2, 1)		CSC371

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Institutional Elective Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
62	HUM220	Introduction to Psychology	3(3, 0)		
63	HUM221	International Relations	3(3, 0)		
64	HUM320	Introduction to Sociology	3(3, 0)		
65	HUM430	French	3(3, 0)		
66	HUM431	German	3(3, 0)		
67	HUM432	Arabic	3(3, 0)		
68	HUM433	Persian	3(3, 0)		
69	HUM434	Chinese	3(3, 0)		
70	HUM435	Japanese	3(3, 0)		

71	MGT100	Introduction to Business	3(3, 0)		
72	MGT101	Introduction to Management	3(3, 0)		
73	MGT131	Financial Accounting	3(3, 0)		
74	MGT210	Fundamentals of Marketing	3(3, 0)		
75	MGT350	Human Resource Management	3(3, 0)		
76	MGT403	Entrepreneurship	3(3, 0)		
77	MGT522	Marketing of IT and Telecom Products	3(3, 0)		

Safety Critical Systems

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
78	CSE360	Software Safety Critical Systems	3(3, 0)		
79	CSE361	Software Fault Tolerance	3(3, 0)		

Scientific Systems

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
80	CSC353	Computer Graphics	3(2, 1)		MTH231
81	CSC448	Data Visualization	3(3, 0)		

Software Engineering Core Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
82	CSE302	Software Quality Engineering	3(3, 0)		CSE291
83	CSE303	Software Design and Architecture	3(3, 0)		CSE291
84	CSE304	Object Oriented Software Engineering	3(2, 1)		CSE291
85	CSE305	Software Requirement Engineering	3(3, 0)		CSE291
86	CSE455	Software Testing	3(2, 1)		CSE302
87	CSE494	Software Project Management	3(2, 1)		CSE291

Supporting Science Elective Courses

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
88	BIO100	Fundamentals of Biology	3(2, 1)		
89	BIO135	General Chemistry	4(3, 1)		
90	BIO231	Fundamentals of Genetics	4(3, 1)		
91	BIO233	Development Biology	4(3, 1)		
92	BIO310	Introduction to Bioinformatics	4(3, 1)		
93	BSC101	Zoology I	4(3, 1)		
94	BSC102	Plant Sciences I	4(3, 1)		
95	BSC206	Introduction to Microbiology	4(3, 1)		
96	CSC475	Numerical Computing	3(3, 0)		MTH104
97	ENV230	Environmental Monitoring	3(2, 1)		
98	MTH105	Multivariable Calculus	3(3, 0)		MTH104
99	MTH112	Set Theory and Logic	3(3, 0)		
100	MTH232	Abstract Algebra	3(3, 0)		
101	MTH242	Differential Equations	3(3, 0)		MTH104
102	MTH251	Set Topology	3(3, 0)		
103	PHY100	Mechanics and Thermodynamics	4(3, 1)		
104	PHY120	Electricity, Magnetism and Optics	4(3, 1)		
105	PHY229	Modern Physics	4(3, 1)		PHY120
106	SLS130	Introductory Soil Science I	4(3, 1)		

Web Technologies

	Course Code	Course Title	Credit Hours	Co-requisite(s)	Prerequisite (s)
107	CSC303	Mobile Application Development	3(2, 1)		CSC241
108	CSC336	Web Technologies	3(2, 1)		CSC241
109	CSC337	Advanced Web Technologies	3(2, 1)		
110	CSE344	Semantic Web	3(2, 1)		

Note:

Note: 1. CSE350-Topics in Software Engineering -I and CSE483- Topics in Software Engineering -II may be allowed to offer upon getting prior approval of the course contents from the Head of Department (HoD). 2. Non Muslim students can opt for HUM114 Ethics 3(3, 0) in lieu of HUM110 Islamic Studies, if they intend to. 3. CSE350 and CSE483 can be offered with the approval of the Head of Department. however, the contents of these courses must reflect the recent industrial practices. 4.Deficiency Courses (Non-Credit). Students with Pre-Medical background at Intermediate level have to pass deficiency courses i.e., of MTH091 (Pre-Calculus I) and MTH092 (Pre-Calculus II)

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