

Curriculum for B.Sc. in Computer Science and Engineering

Version: Summer-2018

Curriculum Name: B.Sc. in Computer Science and Engineering

Minimum Requirement 140 Credits

Credits Requirement for the degree B.Sc. in Computer Science and Engineering

SL	Name	Credits
1	COMPULSORY LANGUAGE AND GENERAL EDUCATION COURSES	9
2	ELECTIVE GENERAL EDUCATION COURSES	9
3	BASIC SCIENCE COURSES	11
4	MATHEMATICS AND STATISTICS COURSES	15
5	CORE COMPUTER SCIENCE AND ENGINEERING COURSES	62
6	CAPSTONE PROJECT	6
7	NON-MAJOR ELECTIVE COMPUTER SCIENCE AND ENGINEERING COURSES	8
8	MAJOR	20
Total Credits		140

Compulsory Language and General Education Courses

(9 credits)

SL	Course Code	Course Name	Credits
1	ENG101	Basic English	3
2	ENG102	Composition and Communication Skills	3
3	GEN226	Emergence of Bangladesh	3

Elective General Education Courses

(9 credits)

SL	Course Code	Course Name	Credits
1	ACT101	Financial Accounting	3
2	BUS231	Business Communication	3
3	BUS321	Business for Engineering and Technology	3
4	ECO101	Principles of Microeconomics	3
5	FIN101	Principles of Finance	3
6	GEN201	Bangladesh Studies	3
7	GEN202	Eastern Culture and Heritage	3

SL	Course Code	Course Name	Credits
8	GEN203	Ecological System and Environment	3
9	GEN204	Western Thought	3
10	GEN210	International Relations	3
11	GEN214	Introduction to Development Studies	3
12	MGT321	Industrial Management	3
13	MGT337	Production Operations Management	3
14	MKT101	Principles of Marketing	3
15	SOC217	Religion, Ethnicity, Culture and Development in South Asia	3
16	SOC317	Sociology of Science and Technology	3

Basic Science Courses**(11 credits)**

SL	Course Code	Course Name	Credits
1	CHE109	Engineering Chemistry-I	4
2	PHY109	Engineering Physics-I	4
3	PHY209	Engineering Physics-II	3

Mathematics and Statistics Courses**(15 credits)**

SL	Course Code	Course Name	Credits
1	MAT101	Differential & Integral Calculus	3
2	MAT102	Differential Equations & Special Functions	3
3	MAT104	Co-ordinate Geometry & Vector Analysis	3
4	MAT205	Linear Algebra & Complex Variables	3
5	STA102	Statistics and Probability	3

Core Computer Science and Engineering Courses**(62 credits)**

SL	Course Code	Course Name	Credits
1	CSE103	Structured Programming	4.5
2	CSE106	Discrete Mathematics	3
3	CSE110	Object Oriented Programming	4.5
4	CSE200	Computer-Aided Engineering Drawing	1
5	CSE207	Data Structures	4
6	CSE209	Electrical Circuits	4
7	CSE246	Algorithms	4.5

SL	Course Code	Course Name	Credits
8	CSE251	Electronic Circuits	4
9	CSE302	Database Systems	4.5
10	CSE325	Operating Systems	4
11	CSE345	Digital Logic Design	4
12	CSE347	Information System Analysis and Design	4
13	CSE360	Computer Architecture	3
14	CSE405	Computer Networks	4
15	CSE407	Green Computing	3
16	CSE487	Computer and Cyber Security	3
17	CSE495	IT Project Management and Entrepreneurship	3

Capstone Project

(6 credits)

Completed at least 105 credit hours

SL	Course Code	Course Name	Credits
1	CSE400A	Capstone Project (Part 1 of 3)	1
2	CSE400B	Capstone Project (Part 2 of 3)	2
3	CSE400C	Capstone Project (Part 3 of 3)	3

Non-major Elective Computer Science and Engineering Courses

(8 credits)

Minimum 8 Credits (two to three courses depending on credits of the courses) from one or more major/non-major areas other than selected major area

SL	Course Code	Course Name	Credits
1	CSE225	Numerical Methods	4
2	CSE303	Statistics for Data Science	4
3	CSE313	Theory of Computations	3
4	CSE350	Data Communications	4
5	CSE355	Digital System Design	4
6	CSE366	Artificial Intelligence	4
7	CSE406	Internet of Things	4
8	CSE412	Software Engineering	4
9	CSE420	Computer Graphics	4
10	CSE422	Simulation and Modeling	4
11	CSE423	Software Architecture	4
12	CSE428	Human Computer Interactions	4

SL	Course Code	Course Name	Credits
13	CSE430	Software Testing and Quality Assurance	4
14	CSE432	Digital Signal Processing	4
15	CSE438	Digital Image Processing	4
16	CSE442	Microprocessors and Microcontrollers	4
17	CSE445	Computer Vision	4
18	CSE446	ASIC Design Using FPGA	4
19	CSE452	Distributed Systems and Algorithms	4
20	CSE453	Wireless Network	4
21	CSE457	Cellular Networks	4
22	CSE460	Cryptography	3
23	CSE464	Advanced Database System	4
24	CSE471	Compiler Design	4
25	CSE472	Advanced Network Services and Management	4
26	CSE473	Network Security and Systems	4
27	CSE474	Pattern Recognition	4
28	CSE475	Machine Learning	4
29	CSE477	Data Mining	4
30	CSE479	Web Programming	4
31	CSE481	Nature-Inspired Computing	4
32	CSE483	Graph Theory	3
33	CSE484	Computational Geometry	3
34	CSE486	Bioinformatics Algorithms	4
35	CSE488	Big Data Analytics	4
36	CSE489	Mobile Programming	4
37	CSE491	VLSI Design	4
38	CSE492	Robotics	4
39	CSE494	Embedded Systems	4

Major Area Courses

Communications and Networking

(20 credits)

SL	Course Code	Course Name	Credits
1	CSE350	Data Communications	4

SL	Course Code	Course Name	Credits
2	CSE432	Digital Signal Processing	4
3	CSE452	Distributed Systems and Algorithms	4
4	CSE453	Wireless Network	4
5	CSE457	Cellular Networks	4
6	CSE489	Mobile Programming	4

Software Engineering**(20 credits)**

SL	Course Code	Course Name	Credits
1	CSE412	Software Engineering	4
2	CSE422	Simulation and Modeling	4
3	CSE423	Software Architecture	4
4	CSE428	Human Computer Interactions	4
5	CSE430	Software Testing and Quality Assurance	4
6	CSE452	Distributed Systems and Algorithms	4
7	CSE464	Advanced Database System	4
8	CSE479	Web Programming	4
9	CSE489	Mobile Programming	4

Hardware Engineering**(20 credits)**

SL	Course Code	Course Name	Credits
1	CSE355	Digital System Design	4
2	CSE406	Internet of Things	4
3	CSE442	Microprocessors and Microcontrollers	4
4	CSE491	VLSI Design	4
5	CSE492	Robotics	4
6	CSE494	Embedded Systems	4

Intelligence Systems and Data Science**(20 credits)**

SL	Course Code	Course Name	Credits
1	CSE303	Statistics for Data Science	4
2	CSE366	Artificial Intelligence	4
3	CSE420	Computer Graphics	4
4	CSE438	Digital Image Processing	4
5	CSE452	Distributed Systems and Algorithms	4

SL	Course Code	Course Name	Credits
6	CSE474	Pattern Recognition	4
7	CSE477	Data Mining	4
8	CSE486	Bioinformatics Algorithms	4

Course Description

Course wise Advising Criteria (Depends on Completed Credit) Prerequisites

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
1	ENG102	Composition and Communication Skills	3	140	0	0	ENG101
2	GEN226	Emergence of Bangladesh	26	140	0	0	ENG102,CSE106
3	ENG101	Basic English	0	140	0	0	
4	STA102	Statistics and Probability	26	140	0	0	MAT101,CSE106
5	CHE109	Engineering Chemistry-I	3	140	0	0	CSE103
6	PHY209	Engineering Physics-II	49	140	0	0	MAT205
7	PHY109	Engineering Physics-I	13	140	0	0	MAT102,CSE103
8	MAT205	Linear Algebra & Complex Variables	38	140	0	0	MAT102
9	MAT104	Co-ordinate Geometry & Vector Analysis	13	140	0	0	MAT101
10	MAT102	Differential Equations & Special Functions	3	140	0	0	MAT101
11	MAT101	Differential & Integral Calculus	0	140	0	0	

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
12	GEN214	Introduction to Development Studies	38	140	0	0	ENG102
13	POP203	Introduction to Population Studies	150	150	0	0	
14	POP202	Introduction to Public Health	150	150	0	0	
15	POP201	Health Challenges of Adolescents and Youths	150	150	0	0	
16	GEN239	Professional Ethics	140	140	0	0	
17	GEN224	Bengali Language	140	140	0	0	
18	GEN223	Contemporary Security Studies in Asia-Pacific	140	140	0	0	
19	GEN221	Globalization, Development and Change	140	140	0	0	
20	GEN220	Principles of Public Relations	140	140	0	0	
21	GEN218	Introduction to Arabic Language	140	140	0	0	
22	GEN217	Introduction to Chinese Language	140	140	0	0	
23	GEN216	Introduction to Spanish Language	140	140	0	0	

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
24	GEN215	Introduction to French Language	140	140	0	0	
25	GEN213	Introduction to German Language	140	140	0	0	
26	GEN212	Women in Development	140	140	0	0	
27	GEN211	Concepts of Journalism & Media Studies	140	140	0	0	
28	GEN210	International Relations	49	140	0	0	ENG102
29	GEN209	Social Psychology	140	140	0	0	
30	GEN208	Introduction to Philosophy	140	140	0	0	
31	GEN207	Industrial Psychology	140	140	0	0	
32	GEN205	Introduction to Psychology	140	140	0	0	
33	GEN204	Western Thought	49	140	0	0	
34	GEN203	Ecological System and Environment	38	140	0	0	
35	GEN202	Eastern Culture and Heritage	140	140	0	0	
36	GEN201	Bangladesh Studies	49	140	0	0	ENG102
37	CSE420	Computer Graphics	97	140	0	0	CSE246,CSE347
38	CSE438	Digital Image Processing	97	140	0	0	CSE366

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
39	CSE489	Mobile Programming	75	140	0	0	CSE246,CSE347
40	CSE457	Cellular Networks	97	140	0	0	CSE405
41	CSE453	Wireless Network	97	140	0	0	CSE405
42	CSE452	Distributed Systems and Algorithms	97	140	0	0	CSE325
43	CSE432	Digital Signal Processing	85	140	0	0	CSE246,CSE347
44	CSE350	Data Communications	67	140	0	0	CSE251
45	CSE400	Capstone Project	95	140	0	0	
46	CSE487	Computer and Cyber Security	97	140	0	0	CSE405
47	CSE405	Computer Networks	75	140	0	0	CSE246,CSE325
48	CSE347	Information System Analysis and Design	67	140	0	0	CSE302
49	CSE360	Computer Architecture	67	140	0	0	CSE325,CSE246
50	CSE345	Digital Logic Design	67	140	0	0	CSE251
51	CSE325	Operating Systems	45	140	0	0	CSE207
52	CSE302	Database Systems	57	140	0	0	CSE106,CSE207
53	CSE251	Electronic Circuits	33	140	0	0	CSE209
54	CSE246	Algorithms	57	140	0	0	CSE207
55	CSE209	Electrical Circuits	23	140	0	0	

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
56	CSE207	Data Structures	33	140	0	0	CSE110,CSE106
57	CSE200	Computer-Aided Engineering Drawing	23	140	0	0	CSE110
58	CSE110	Object Oriented Programming	13	140	0	0	CSE106,CSE103
59	CSE106	Discrete Mathematics	3	140	0	0	CSE103
60	CSE103	Structured Programming	0	140	0	0	
61	CSE474	Pattern Recognition	97	140	0	0	CSE366
62	CSE475	Machine Learning	97	140	0	0	CSE366
63	CSE477	Data Mining	97	140	0	0	CSE366
64	CSE486	Bioinformatics Algorithms	97	140	0	0	CSE246
65	CSE479	Web Programming	97	140	0	0	CSE302,CSE347
66	CSE464	Advanced Database System	97	140	0	0	CSE302,CSE347
67	CSE428	Human Computer Interactions	97	140	0	0	CSE412
68	CSE423	Software Architecture	97	140	0	0	CSE412
69	CSE422	Simulation and Modeling	97	140	0	0	CSE246
70	CSE430	Software Testing and Quality Assurance	85	140	0	0	CSE412
71	CSE412	Software Engineering	73	140	0	0	CSE347,CSE246
72	CSE494	Embedded Systems	97	140	0	0	CSE442

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
73	CSE492	Robotics	97	140	0	0	CSE366
74	CSE491	VLSI Design	97	140	0	0	CSE345
75	CSE406	Internet of Things	97	140	0	0	CSE405
76	CSE442	Microprocessors and Microcontrollers	85	140	0	0	CSE360
77	CSE355	Digital System Design	67	140	0	0	CSE345
78	CSE366	Artificial Intelligence	85	140	0	0	CSE246,CSE302
79	MKT101	Principles of Marketing	63	140	0	0	
80	FIN101	Principles of Finance	63	140	0	0	STA102
81	MGT337	Production Operations Management	63	140	0	0	STA102
82	MGT321	Industrial Management	140	140	0	0	ENG102
83	BUS231	Business Communication	63	140	0	0	ENG102
84	BUS321	Business for Engineering and Technology	63	140	0	0	ENG102
85	ACT101	Financial Accounting	63	140	0	0	
86	SOC217	Religion, Ethnicity, Culture and Development in South Asia	49	140	0	0	ENG102

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
87	CSE495	IT Project Management and Entrepreneurship	110	140	0	0	CSE347,CSE405
88	CSE407	Green Computing	97	140	0	0	CSE405
89	CSE326	Algorithms	63	140	0	0	CSE207
90	CSE303	Statistics for Data Science	71	140	0	0	STA102,CSE302,MAT205
91	CSE484	Computational Geometry	97	140	0	0	CSE246
92	CSE483	Graph Theory	97	140	0	0	CSE246
93	CSE471	Compiler Design	97	140	0	0	CSE246
94	CSE460	Cryptography	97	140	0	0	CSE246
95	CSE313	Theory of Computations	90	140	0	0	CSE246
96	CSE225	Numerical Methods	90	140	0	0	CSE103
97	CSE446	ASIC Design Using FPGA	97	140	0	0	CSE345
98	CSE473	Network Security and Systems	97	140	0	0	CSE405
99	CSE472	Advanced Network Services and Management	97	140	0	0	CSE405
100	CSE488	Big Data Analytics	97	140	0	0	CSE302,CSE405
101	CSE481	Nature-Inspired Computing	97	140	0	0	CSE246
102	CSE445	Computer Vision	97	140	0	0	CSE246

SL	Course Code	Course Name	Min. Credit	Max. Credit	Min. CGPA	Max. CGPA	Course Prerequisites
103	SOC317	Sociology of Science and Technology	38	140	0	0	
104	ECO101	Principles of Microeconomics	38	140	0	0	
105	CSE400A	Capstone Project (Part 1 of 3)	95	140	0	0	
106	CSE400B	Capstone Project (Part 2 of 3)	95	140	0	0	
107	CSE400C	Capstone Project (Part 3 of 3)	95	140	0	0	