B.Sc. in CSE

Outcome-Based Curriculum

(Effective from Summer Semester 2018)

Course Summery

Category		Type	Minimum Credits	
General	Language (2 courses, 6 credits)	Required	6	18
	General Education (1 course, 3 credits)	Required	3	
	General Education (3 course, 9 credits)	Elective	9	
Natural Science Courses		Required		11
Mathematics and Statistics Courses		Required		15
Core CSE Courses		Required		62
Major CSE Courses		Required	8	20
		Elective	12	
Non-Major CSE Courses		Elective		8
Core Capstone Project		Required		6
Total Credits (Minimum)				**140**

List of Courses

Course	Credits	Prerequisite
Compulsory Language and General Education Courses	**9**	
ENG101 Basic English	3	
ENG 102 Composition and Communication Skills	3	ENG101
GEN226 Emergence of Bangladesh	3	ENG102

Elective General Education Courses	**9**	

Core Natural Science Courses	**9+2=11**	
PHY109 Engineering Physics-I (Introductory Classical Physics)	3+1=4	MAT102
PHY209 Engineering Physics-II (Introductory Quantum Physics)	3+0=3	MAT205
CHE109 Engineering Chemistry	3+1=4	

Core Mathematics and Statistics Course	**15**	
MAT101 Differential and Integral Calculus	3	
MAT102 Differential Equations and Special Functions	3	MAT101
MAT104 Coordinate Geometry and Vector Analysis	3	MAT101
MAT205 Linear Algebra and Complex Variable	3	MAT102
STA102 Statistics and Probability	3	

Core Computer Science and Engineering Courses	**48+14=62**	
CSE103 Structured Programming	3+1.5=4.5	
CSE106 Discrete Mathematics	3+0=3	CSE103
CSE110 Object Oriented Programming	3+1.5=4.5	CSE106
CSE200 Computer-Aided Engineering Drawing	0+1=1	
CSE209 Electrical Circuits	3+1=4	
CSE207 Data Structures	3+1=4	CSE110
CSE251 Electronic Circuits	3+1=4	CSE209
CSE325 Operating Systems	3+1=4	CSE207
CSE246 Algorithms	3+1.5=4.5	CSE207
CSE302 Database Systems	3+1.5=4.5	CSE106
CSE345 Digital Logic Design	3+1=4	CSE251
CSE347 Information System Analysis and Design	3+1=4	CSE302
CSE360 Computer Architecture	3+0=3	CSE221
CSE405 Computer Networks	3+1=4	CSE326
CSE407 Green Computing	3+0=3	CSE405
CSE487 Cyber Security, Ethics and Law	3+0=3	CSE405

CSE495 IT Project Management and Entrepreneurship	3+0=3	CSE347

Core Capstone Project	**0+6=6**	
CSE400 Capstone Project	0+6=6	Completed at least 105 credit hours
Major Requirements	**Courses from the selected major area**	
Student should select one of the four major areas for degree major requirement	Two Compulsory courses (6+2=8 credits)	Three elective courses (9+3=12 credits)
Non-Major Elective Requirements		
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		

Four Major Areas and Courses (2 Compulsory and 3 Elective Courses)	**15+5=20**	

1. Intelligent Systems and Data Science	**15+5=20**	
Compulsory Courses	***6+2=8***	
CSE303 Statistics for Data Science	3+1=4	STA102
CSE366 Artificial Intelligence	3+1=4	CSE326
Elective Courses (Any 3 Courses)	***9+3=12***	
CSE420 Computer Graphics	3+1=4	CSE326
CSE438 Digital Image Processing	3+1=4	CSE326
CSE445 Computer Vision	3+1=4	CSE326
CSE452 Distributed Systems and Algorithms	3+1=4	CSE221
CSE474 Pattern Recognition	3+1=4	CSE366
CSE475 Machine Learning	3+1=4	CSE366
CSE477 Data Mining	3+1=4	CSE366
CSE481 Nature-Inspired Computing	3+1=4	CSE326
CSE486 Bioinformatics Algorithms	3+1=4	CSE326
CSE488 Big Data Analytics	3+1=4	CSE302

2. Software Engineering	**15+5=20**	
Compulsory Courses	***6+2=8***	
CSE412 Software Engineering	3+1=4	CSE347
CSE430 Software Testing and Quality Assurance	3+1=4	CSE412
Elective Courses (Any 3 Courses)	***9+3=12***	
CSE422 Simulation and Modeling	3+1=4	CSE326

CSE423 Software Architecture	3+1=4	CSE412
CSE428 Human Computer Interactions	3+1=4	CSE412
CSE452 Distributed Systems and Algorithms	3+1=4	CSE221
CSE464 Advanced Database System	3+1=4	CSE302
CSE479 Web Programming	3+1=4	CSE302
CSE489 Mobile Programming	3+1=4	CSE326
3. Communications and Networking	**15+5=20**	
Compulsory Courses	***6+2=8***	
CSE350 Data Communications	3+1=4	CSE251
CSE432 Digital Signal Processing	3+1=4	CSE326
Elective Courses (Any 3 Courses)	***9+3=12***	
CSE452 Distributed Systems and Algorithms	3+1=4	CSE221
CSE453 Wireless Networks	3+1=4	CSE405
CSE457 Cellular Networks	3+1=4	CSE405
CSE472 Advanced Network Services and Management	3+1=4	CSE405
CSE473 Network Security and Systems	3+1=4	CSE405
CSE489 Mobile Programming	3+1=4	CSE326

4. Hardware Engineering	**15+5=20**	
Compulsory Courses	***6+2=8***	
CSE355 Digital System Design	3+1=4	CSE345
CSE442 Microprocessors and Microcontrollers	3+1=4	CSE360
Elective Courses (Any 3 Courses)	***9+3=12***	
CSE406 Internet of Things	3+1=4	CSE405
CSE446 ASIC Design Using FPGA	3+1=4	CSE345
CSE491 VLSI Design	3+1=4	CSE345
CSE492 Robotics	3+1=4	CSE366
CSE494 Embedded Systems	3+1=4	CSE442
Non-Major Area: Computational Theory		
CSE225 Numerical Methods	3+1=4	CSE103
CSE313 Theory of Computations	3+0=3	CSE326
CSE460 Cryptography	3+0=3	CSE326
CSE471 Compiler Design	3+1=4	CSE326
CSE483 Graph Theory	3+0=3	CSE326
CSE484 Computational Geometry	3+0=3	CSE326

Course Flowchart

	1st Year		2nd Year		3rd Year		4th Year	
	Course (Credit)	Pre-requisite	Course	Pre-requisite	Course	Pre-requisite	Course	Pre-requisite
1st Semester	ENG101 Basic English (3)		GEN226 Emergence of Bangladesh (3)	ENG102	Elective General Education-III (3)		CSE400A Capstone Project-I (0+1=1)	
	MAT101 Differential and Integral Calculus (3)		STA102 Statistics and Probability (3)		CSE246 Algorithms (3+1.5=4.5)	CSE207	CSE407 Green Computing (3+0=3)	CSE405
	CSE103 Structured Programming (3+1.5=4.5)		CSE200 Computer-Aided Engineering Drawing (0+1=1)		CSE302 Database Systems (3+1.5=4.5)	CSE106	Elective Major-I (3+1=4)	
			CSE209 Electrical Circuits (3+1=4)				Elective Non-Major-I (3+1=4)	
2nd Semester	ENG102 Composition And Communication Skills (3)	ENG101	Elective General Education-I (3)		CSE345 Digital Logic Design (3+1=4)	CSE251	CSE400B Capstone Project-II (0+2=2)	
	MAT102 Differential Equations and Special Functions (3)	MAT101	MAT205 Linear Algebra and Complex Variables (3)	MAT102	CSE347 Information System Analysis and Design (3+1=4)	CSE302	CSE487 Cyber Security, Ethics and Law (3+0=3)	CSE405
	CSE106 Discrete Mathematics (3+0=3)	CSE103	CSE207 Data Structures (3+1=4)	CSE110	Compulsory Major-I (3+1=4)		Elective Major-II (3+1=4)	
	CHE109 Engineering Chemistry (3+1=4)		CSE251 Electronic Circuits (3+1=4)	CSE209			Elective Non-Major-II (3+1=4)	
3rd Semester	PHY109 Engineering Physics-I (3+1=4)	MAT102	Elective General Education-II (3)		CSE360 Computer Architecture (3+0=3)	CSE221	CSE400C Capstone Project-III (0+3=3)	
	MAT104 Coordinate Geometry and Vector Analysis (3)	MAT101	PHY209 Engineering Physics-II (3+0=3)	MAT205	CSE 405 Computer Networks (3+1=4)	CSE326	CSE495 IT Project Management and Entrepreneurship (3+0=3)	CSE347
	CSE110 Object Oriented Programming (3+1.5=4.5)	CSE106	CSE325 Operating Systems (3+1=4)	CSE207	Compulsory Major-II (3+1=4)		Elective Major-III (3+1=4)	
Year-Credit	**35**		**35**		**35**		**35**	