CURRICULUM
Department of Computer Science and Engineering

1. Vision

To produce competent professionals who shall be leaders in technology, industry and research at the national and international level.

2. Mission

The mission of department of computer Science and Engineering (CSE) is to teach and prepare educated, articulated and skilled computer scientists and engineers for leadership and professional careers and for advanced studies.

3. Program Objectives

a) Provide a strong educational background that prepares them to be a successful professional in industry, government and academic career.
b) Facilitate the student to become CSE engineers who will be engaged in learning, understanding and applying new ideas and technologies.
c) Develop sufficient knowledge so that the students conduct experiments in field of computer science and engineering as well as analyze and interpret the resulting data.
d) Prepare the students to become professional in effective communication, professional ethics, course of professional practices, team work and leadership skill.
e) Provide extensive knowledge of computer science and engineering to pursue advanced degree in computing, science, engineering and other professionally related fields.
f) Provide graduates for becoming successful entrepreneur and manager.

4. Program Outcomes

a) To apply computer science and engineering knowledge for developing software and solving computing problems.
b) Analyze computing problems, identify & define requirements for solution.
c) To design, implement and evaluate computer based system, process, component or program to meet expected requirements.
d) To design and conduct scientific experiments as well as organize, analyze and interpret resulting data.
e) To compete in national and international programming contest & ICT innovations.
f) To develop professional, ethical, security social issues and responsibilities.

5. Generic Skills

- Intellectual skill
- Problem solving
- Entrepreneurship and innovation
- Research skills and awareness
- Practical Skill
- Numeracy skill
- Communication skill
- ICT skill
- Teamwork and leadership
- Social & cooperative
- Self management and professional development skill
- Personal effectiveness/development
- Computer Programming ability
- Software Development Skill

6. Curriculum Structure

Curriculum Lay-out for B.Sc. in Computer Science and Engineering

6.1 Total Credits and Duration

These courses are to be completed within 12 semesters in 4 years. Total credits will be 148. It is mentioned that the students who have completed the 4(four) years in diploma program (CSE) under the Technical Education Board are also eligible for admission under this program. In this regard they may be given some course waiver (12 credits).

6.2 Grouping of Courses

The lists of courses offered to the undergraduate students of Computer Science & Engineering (CSE) are categorized into Core courses and Elective courses. Some of the core courses are offered by the Department of CSE and other departments offer some of these. Elective courses are grouped into two sections. Students have the flexibility to choose courses from amongst the elective courses, subject to the availability of facilities.

Grouping of courses in B.Sc. in CSE are given bellow with credits:

Group 1	: English Language Courses ……..6.00	Credits
Group 2	: General Education Courses …… ……..… 15.00	Credits
Group 3	: Basic Science Courses…….…...11.00	Credits
Group 4	: Mathematics Courses……..…15.00	Credits
Group 5	: Inter-Disciplinary Engineering Courses…….....7.00	Credits
Group 6	: Core Courses……...……74.00	Credits
Group 7 (a)	: Elective Courses (Section I).....…….…….....9.00	Credits
Group 7 (b)	: Elective Courses (Section II)....…….……...11.00	Credits

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Grand Total = 148 Credits

6.3 List of Courses

Courses offered to the undergraduate students of Computer Science & Engineering (CSE) are listed below:

6.3.1 English Language Courses

Course Code	Course Name	Credits
ENG-101	Basic English	3.00
ENG-102	Communicative English	3.00
	Total Credits	**6.00**

6.3.2 General Education Courses

Course Code	Course Name	Credits
GED-101	Principles of Accounting	3.00
GED-102	Bangladesh Studies	3.00
GED-201	Principles of Economics	3.00
GED-202	Principles of Management	3.00
GED-301	Law & Ethics in Engineering Practice	3.00
	Total Credits	**15.00**

6.3.3 Basic Science Courses

Course Code	Course Name	Credits
PHY-101	Physics – I	3.00
PHY-103	Physics – II	3.00
PHY-104	Physics – II Lab	1.00
CHEM-101	Chemistry	3.00
CHEM-102	Chemistry Lab	1.00
	Total Credits	**11.00**

6.3.4 Mathematics Courses

Course Code	Course Name	Credits
MATH-101	MATH - I (Linear Algebra & Co-ordinate Geometry)	3.00
MATH-102	MATH - II (Differential and Integral Calculus)	3.00
MATH-201	MATH - III (Statistical Methods & Probability)	3.00
MATH-202	MATH - IV (Differential Equations & Vector Analysis)	3.00
MATH-203	MATH - V (Complex Variables & Transforms (Laplace & Fourier))	3.00
	Total Credits	**15.00**

6.3.5 Inter-Disciplinary Engineering Courses

Course Code	Course Name	Credits
EEE-201	Electrical Circuits	3.00
EEE-202	Electrical Circuits Lab	1.00
EEE-301	Data & Telecommunication	3.00
	Total Credits	**7.00**

6.3.6 Core Courses

Course Code	Course Name	Credits
CSE-101	Introduction to Computer Systems	3.00
CSE-103	Structured Programming	3.00
CSE-104	Structured Programming Lab	1.00
CSE-105	Digital Systems	3.00
CSE-106	Digital Systems Lab	1.00
CSE-201	Discrete Mathematics	3.00
CSE-203	Electronic Devices & Circuits	3.00
CSE-204	Electronic Devices & Circuits Lab	1.00
CSE-205	Data Structures	3.00

CSE-206	Data Structures Lab	1.00
CSE-207	Object Oriented Programming	3.00
CSE-208	Object Oriented Programming Lab	1.00
CSE-209	Computer Organization & Architecture	3.00
CSE-301	Algorithm Design and Analysis	3.00
CSE-302	Algorithm Design and Analysis Lab	1.00
CSE-303	Numerical Methods	3.00
CSE-304	Numerical Methods Lab	1.00
CSE-305	Microprocessor, Microcontroller and Assembly Language	3.00
CSE-306	Microprocessor, Microcontroller and Assembly Language Lab	1.00
CSE-307	Database Management Systems	3.00
CSE-308	Database Management Systems Lab	1.00
CSE-309	Operating Systems	3.00
CSE-310	Operating Systems Lab	1.00
CSE-311	Computer Networks	3.00
CSE-312	Computer Networks Lab	1.00
CSE-401	Compiler Design	3.00
CSE-402	Compiler Design Lab	1.00
CSE-403	Peripherals and Interfacing	3.00
CSE-404	Peripherals and Interfacing Lab	1.00
CSE-405	Computer Graphics and Multimedia	3.00
CSE-406	Computer Graphics and Multimedia Lab	1.00
CSE-407	Artificial Intelligence and Neural Networks	3.00
CSE-408	Artificial Intelligence and Neural Networks Lab	1.00
CSE-425	Project Work	5.00
	Total Credits	**74.00**

6.3.7 (a) Elective Courses (Section I)

Course Code	Course Name	Credits
CSE-313	System Analysis and Design	3.00
CSE-315	Theory of Computing	3.00
CSE-317	Software Engineering	3.00
CSE-319	Management Information System	3.00
CSE-321	System Programming	3.00
	Total Credits	**9.00**

6.3.7 (b) Elective Courses (Section II)

Course Code	Course Name	Credits
CSE-409	E-Commerce & Web Engineering	3.00
CSE-410	E-Commerce & Web Engineering Lab	1.00
CSE-411	Parallel and Distributed Processing	3.00
CSE-413	Simulation and Modeling	3.00
CSE-414	Simulation and Modeling Lab	1.00
CSE-415	Cryptography & Network Security	3.00
CSE-417	Digital Signal Processing	3.00
CSE-418	Digital Signal Processing Lab	1.00
CSE-419	Image Processing	3.00
CSE-420	Image Processing Lab	1.00
CSE-421	VLSI Design and Testing	3.00
CSE-422	VLSI Design and Testing Lab	1.00
CSE-423	Wireless Networks	3.00
CSE-424	Wireless Networks Lab	1.00
	Total Credits	**11.00**

Note: *Students must take three courses from Elective courses (Section I) and three courses from Elective courses (Section II) (Two courses will be taken with Lab works and one course without Lab works from Section II).*

Semester-wise Course Distribution of CSE

Semester 1

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-101	Introduction to Computer Systems	3	3
2	PHY-101	Physics-I	3	3
3	GED-101	Principles of Accounting	3	3
4	GED-102	Bangladesh Studies	3	3
		Subtotal:	**12**	**12**

Semester 2

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-103	Structured Programming	3	3
2	CSE-104	Structured Programming Lab	1	2
3	PHY-103	Physics-II	3	3
4	PHY-104	Physics-II Lab	1	2
5	ENG-101	Basic English	3	3
6	MATH-101	Linear Algebra & Co-ordinate Geometry	3	3
		Subtotal:	**14**	**16**

Semester 3

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-105	Digital Systems	3	3
2	CSE-106	Digital Systems Lab	1	2
3	CHEM-101	Chemistry	3	3
4	CHEM-102	Chemistry Lab	1	2
5	ENG-102	Communicative English	3	3
6	MATH-102	Differential and Integral Calculus	3	3
		Subtotal:	**14**	**16**

Semester 4

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-201	Discrete Mathematics	3	3
2	EEE-201	Electrical Circuits	3	3
3	EEE-202	Electrical Circuits Lab	1	2
4	GED-201	Principles of Economics	3	3
5	MATH-201	Statistical Methods & Probability	3	3
		Subtotal:	**13**	**14**

Semester 5

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-203	Electronic Devices & Circuits	3	3
2	CSE-204	Electronic Devices & Circuits Lab	1	2
3	CSE-205	Data Structures	3	3
4	CSE-206	Data Structures Lab	1	2
5	MATH-202	Differential Equations & Vector Analysis	3	3
		Subtotal:	**11**	**13**

Semester 6

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-207	Object Oriented Programming	3	3
2	CSE-208	Object Oriented Programming Lab	1	2
3	CSE-209	Computer Organization & Architecture	3	3
4	GED-202	Principles of Management	3	3
5	MATH-203	Complex Variables and Transforms (Laplace & Fourier)	3	3
		Subtotal :	**13**	**14**

Semester 7

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-301	Algorithm Design & Analysis	3	3
2	CSE-302	Algorithm Design & Analysis Lab	1	2
3	CSE-303	Numerical Analysis	3	3
4	CSE-304	Numerical Analysis Lab	1	2
5	EEE-301	Data & Telecommunication	3	3
6	GED-301	Law & Ethics in Engineering Practice	3	3
		Subtotal:	**14**	**16**

Semester 8

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-305	Microprocessor, Microcontroller & Assembly Language	3	3
2	CSE-306	Microprocessor, Microcontroller & Assembly Language Lab	1	2
3	CSE-307	Database Management Systems	3	3
4	CSE-308	Database Management Systems Lab	1	2
5	CSE-	Elective Course (Section I)	3	3
		Subtotal:	**11**	**13**

Semester 9

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-309	Operating Systems	3	3
2	CSE-310	Operating Systems Lab	1	2
3	CSE-311	Computer Networks	3	3
4	CSE-312	Computer Networks Lab	1	2
5	CSE-	Elective Course (Section I)	3	3
6	CSE-	Elective Course (Section I)	3	3
		Subtotal:	**14**	**16**

Semester 10

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-401	Compiler Design	3	3
2	CSE-402	Compiler Design Lab	1	2
3	CSE-403	Peripherals & Interfacing	3	3
4	CSE-404	Peripherals & Interfacing Lab	1	2
5	CSE-	Elective Course (Section II)	3	3
6	CSE-	Elective Course (Section II) Lab	1	2
		Subtotal:	**12**	**15**

Semester 11

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-405	Computer Graphics & Multimedia	3	3
2	CSE-406	Computer Graphics & Multimedia Lab	1	2
3	CSE-407	Artificial Intelligence & Neural Networks	3	3
4	CSE-408	Artificial Intelligence & Neural Networks Lab	1	2
5	CSE-	Elective Course (Section II)	3	3
		Subtotal:	**11**	**13**

Semester 12

Sl No.	Course Code	Course Title	Credit(s)	Credit Hours
1	CSE-	Elective Course (Section II)	3	3
2	CSE-	Elective Course (Section II) Lab	1	2
3	CSE-425	Project Work	5	-
		Subtotal:	**9**	

6.4 Summary of Distribution:

Semester 1 :	12.00	Credits
Semester 2 :	14.00	Credits
Semester 3 :	14.00	Credits
Semester 4 :	13.00	Credits
Semester 5 :	11.00	Credits
Semester 6 :	13.00	Credits
Semester 7 :	14.00	Credits
Semester 8 :	11.00	Credits
Semester 9 :	14.00	Credits
Semester 10 :	12.00	Credits
Semester 11:	11.00	Credits
Semester 12:	09.00	Credits
Grand Total:	**148.00**	**Credits**

6.5 Examinations and Grading System

6.5.1 The total performance of a student in a given course will be based on:

- Continuous assessment (attendance, class performance, quizzes and assignments).
- Mid-Term examination.
- Semester final examination.
- Improvement examination, if any.

6.5.2 The continuous assessment and the Semester Final examinations will form the regular examination system, but the improvement examinations will provide additional opportunities to improve the results of the students.

6.5.3 Marks distribution of each course is as follows:

1. Attendance	5%
2. Behavior	5%
3. Class Performance	10%
4. Assignment	10%
5.Mid-Term Exam	20%
6.Course Final Exam	50%
Total	**100%**

6.5.4 Grading system (UGC's uniform grading) of DIU

Numerical Grade	**Letter Grade**		**Grade Point**
80% and above	A+	(A Plus)	4.00
75% to less than 80%	A	(A Regular)	3.75
70% to less than 75%	A-	(A Minus)	3.50
65% to less than 70%	B+	(B Plus)	3.25
60% to less than 65%	B	(B Regular)	3.00
55% to less than 60%	B-	(B Minus)	2.75
50% to less than 55%	C+	(C Plus)	2.50
45% to less than 50%	C	(C Regular)	2.25
40% to less than 45%	D		2.00
less than 40%	F		0.00

Note: *"F" is the failing grade.*

Student's performance will be evaluated on the basis of Grade Point Average (GPA) in each semester and Cumulative Grade Point Average (CGPA) is the Average Grade Point of all semesters.

6.5.5 Project Evaluation

Project work on B. Sc in CSE is carried out for 4 months in the last Semester. A group of students works for one project under one supervisor. They take project works in the different fields of CSE available in the Department. After completion of the project work the students submit the project report to the department after fully reviewed by the supervisor. A panel of Examiners comprising of one External Examiner from a recognized University and three Internal Examiners conduct the defense of the project work. The students individually present their project work in front of the panel of the Examiners. Total of 200 marks are allocated for the project work, out of which 120 marks are allocated for project defense and remaining 80 marks are allocated for project report.

7. Teaching Strategy

- Lecture
- Rapport building
- Demonstration
- Group work
- Group Discussion
- Case Study
- Multimedia
- Hand note
- Text book

8. Assessment Strategy

- Q/A (Question / Answer)
- Test (BQ / SQ)
- Demonstration
- Assignment
- Presentation
- Quiz Test
- Class Test