**Name of the Program: Bachelor of Science in Computer Science and Engineering, in short 'B.Sc in CSE'.**

**Title of the Degree**
Bachelor of Science in Computer Science and Engineering.

**Aims and Objectives of the Program**

The B.Sc. in Computer Science and Engineering (CSE) program is designed to produce skilled graduates in the field to satisfy the growing demands of computer engineers in home and abroad. It provides the learners an opportunity to obtain broad knowledge of Computer Science, Computer Engineering with some freedom to tailor the program according to the learner's individual needs. The objectives of the program are –
❖ to produce engineers equipped with the technical knowledge and skills with the ability to apply them correctly, and with the creativity and self-development.
❖ to train them the communication and collaboration skills and the ability to use new technologies to develop themselves to move with the rapidly innovative world.
❖ to produce scientists and engineers equipped with morals and ethics.
❖ to create opportunity for teaching and research in Computer Science and Engineering.

**Prospect/ Employments Opportunity**

After completing the B.Sc. in Computer Science and Engineering program, a learner should be able to get job in the field of Information and Communication Technology (ICT). Graduates with their degree of B. Sc. in Computer Science and Engineering will be well placed in the following key areas-
❖ production and development industry**;**
❖ software development company**;**
❖ measurements, instrumentation and testing computing**;**
❖ information and communication technology sector**;** and
❖ teaching and research**;**

Besides of this, in-service graduate will get up graduation/promotion.

**Eligible Criteria for Admission into the Program**
To be eligible for admission in B.Sc. in Computer Science and Engineering program, a candidate must pass SSC and HSC examinations or its equivalent in Science group. Minimum qualifications to take part in the admission test are as follows:

(i) Minimum GPA 2.5 / 2nd division in SSC/equivalent and 2.5/ 2nd division in HSC/equivalent examinations separately.
(ii) Applicants must have passed HSC/equivalent examination from Technical Education Board with Mathematics / higher mathematics, Physics, with minimum GPA 2.5/ 2nd division in HSC examination.
(iii) Applicants who passed the Diploma in Computer Science and Application (DCSA) program from Bangladesh Open University.
(iv) Applicants who obtained 3 (three) or 4 (four) years Diploma in CSE/ Electrical Engineering/ Electronic Engineering/ Telecommunication Engineering from a recognized Polytechnic Institute with a minimum CGPA 2.0 / 2nd division.
(v) Applicants who have passed SSC/equivalent and HSC/ equivalent examination in the current year or years before the notification can apply.

**Collection of Admission Form**

Admission form and learners guide shall be collected from the local Regional Centre (RC) or website after advertisement of the program in national dailies, Radio and TV free of cost. Online submission of application is desirable.

**Submission of Application Form**

After filling up the prescribed form properly it should be submitted to the Dhaka Regional Resource Centre with following documents:

❖ Attested copies of Certificates, Diploma, Marks sheets/ Transcript of examinations;
❖ 2 copies of attested passport size photograph;
❖ Attested copy of National Identity certificate (if any);
❖ Necessary fees as per BOU rules for application;
❖ Testimonial from the last educational institution.

For online submission, see the instructions as stated in Daily Newspaper.

**Selection Criteria**

(i) Written Admission Test: Admission test will be conducted on the basis of the current syllabus of Mathematics, Physics, English and General Knowledge subjects of H.S.C examinations. The questions of admission test will be set in MCQ and/writing ability and conducted out of 100 marks. Duration of the written test is one hour and ten minutes and distribution of marks is given below:

| Serial | Subject | Marks | Syllabus |
|:---:|:---|:---:|:---:|
| 1. | Mathematics | 35 | Current Syllabi of the HSC Examination |
| 2. | Physics | 35 | |
| 3. | English | 20 | |
| 4. | Writing Ability(Bangla and English) | 5+5=10 | |
| **Total** | | **100** | |

(ii) Interview/ Viva-voce: The candidates will be attend in interview/viva-voce based on their obtained marks in written test.

(iii) 10% seats will be reserved for the candidates who have completed Diploma in Computer Science and Application program from BOU and other quotas shall be maintained as per Govt. rules.

(iv) Admission Committee reserves all rights to make any changes.

**Academic Year and Semesters of the Program**

The academic year of the program shall start from July of each calendar year and shall end in June of the next year. Each academic year shall be divided into two semesters as follows:

| Semester | Duration |
|:---:|:---:|
| 1st semester | July-December |
| 2nd semester | January-June |

**Program Plan**

A learner shall have to complete 148 credits to receive the degree. Learner should submit a Project report and should appear Comprehensive Viva voce at the 8th semester.

**Duration of the program:** 4 years

**Total semester :** 8

**Semester length:** 6 months

**Total credit:** 148

**Tenure of Registration**

The registration of a learner in the B.Sc. in CSE Program shall remain valid for a period of 8 years (i.e., for consecutive 16 semesters) since his/her admission into the program, unless the learner falls under any of the following categories:

- cancellation or suspension of registration, or
- discontinuation, or
- expulsion for adopting unfair means.

**Medium of Instruction**

Medium of instruction for the B.Sc. in CSE must be English unless otherwise directed.

**Credit System**

Each credit is worth 15 hours of learner's learning time, comprising all the learning activities, which help the learners to gain knowledge and complete a course successfully.

**Types of Courses**

The courses for this program consist of

- Theoretical courses;
- Practical courses;
- Viva-voce;
- Project work.

**Number of Courses and Credit Distributions**

Total credits of the program are 148 and the credit distributions are given bellow.

| | Type | Number of Courses | Credits |
|---|---|---|---|
| A. | General Courses | 04 | 09 |
| B. | Basic Science Courses | 06 | 17 |
| C. | Core Courses (Theory) | 30 | 86 |
| D | Practical | 24 | 30 |
| E. | Project Work | 1 | 4 |
| F. | Comprehensive Viva  Voce | 1 | 2 |
| **Total** ( Theory + Practical+ Project + Comprehensive Viva Voce) | | 04+06+30+24+1+1= **66** | **148** |

**Year and Semester Wise Course Distribution**

*First Year First Semester*

| Course Code | Course Name | Credit | Pre – requisite* |
|---|---|---|---|
| PHY1132 | Wave, Optics and Thermodynamics | 3.0 | - |
| BUS1123 | Introduction to Business | 2.0 | - |
| MAT1134 | Differential and Integral Calculus | 3.0 | - |
| EEE1135 | Electricity, Magnetism and Electrical Circuit | 3.0 | - |
| EEE11P6 | Electricity, Magnetism and Electrical Circuit Lab | 0.75 | - |
| CSE1127 | Computer Fundamentals | 2.0 | - |
| CSE11P8 | Computer Fundamentals Lab | 0.75 | - |
| **Total Credit** | | **17.5** | |

*First Year Second Semester*

| Course Code | Course Name | Credit | Pre - requisite* |
|---|---|---|---|
| HUM1222 | Bangladesh Studies | 2.0 | - |
| EEE1233 | Electronic Device and Circuits | 3.0 | EEE1135 |
| EEE12P4 | Electronic Device and Circuits Lab | 1.5 | EEE11P6 |
| CSE1235 | Digital Logic Design | 3.0 | - |
| CSE12P6 | Digital Logic Design Lab | 1.5 | - |
| CSE1237 | Structured Programming Language | 3.0 | - |
| CSE12P8 | Structured Programming Language Lab | 1.5 | - |
| **Total Credit** | | **18.5** | |

*Second Year First Semester*

| Course Code | Course Name | Credit | Pre - requisite* |
|---|---|---|---|
| CHE2122 | Chemistry | 2.0 | - |
| CSE2133 | Discrete Mathematics | 3.0 | - |
| CSE2134 | Computer Architecture and Organizations | 3.0 | |
| CSE2135 | Data Structure | 3.0 | CSE1237 |
| CSE21P6 | Data Structure Lab | 1.5 | CSE12P8 |
| CSE2137 | Object Oriented Programming | 3.0 | CSE1237 |
| CSE21P8 | Object Oriented Programming -I Lab | 1.5 | CSE12P8 |
| **Total Credit** | | **20** | |

*Second Year Second Semester*

| Course Code | Course Name | Credit | Pre -requisite* |
|---|---|---|---|
| CSE2232 | Microprocessors and Microcontrollers | 3.0 | CSE2134 |
| CSE22P3 | Microprocessors and Assembly Language Lab | 0.75 | - |
| CSE2234 | Information System Analysis and Design | 3.0 | - |
| CSE22P5 | Information System Analysis and Design Lab | 0.75 | - |
| CSE2236 | Computer Algorithms | 3.0 | CSE2135 |
| CSE22P7 | Computer Algorithms Lab | 1.5 | CSE21P6 |
| CSE2238 | Database Management System | 3.0 | - |
| CSE22P9 | Database Management System Lab | 1.5 | - |
| **Total Credit** | | **18.5** | |

*Third Year First Semester*

| Course Code | Course Name | Credit | Pre -requisite* |
|---|---|---|---|
| CSE3122 | Theory of Computation | 2.0 | CSE2133 |
| CSE3133 | Data and Telecommunications | 3.0 | |
| CSE3134 | Operating System | 3.0 | - |
| CSE31P5 | Operating System Lab | 1.5 | - |
| CSE3136 | Advanced Database Management System | 3.0 | CSE2238 |
| CSE31P7 | Advanced Database Management System Lab | 1.5 | CSE22P9 |
| CSE31P8 | Object Oriented Programming-II Lab | 1.5 | CSE2137 |
| CSE31P9 | Numerical Analysis Lab | 1.5 | |
| **Total Credit** | | **20** | |

*Third Year Second Semester*

| Course Code | Course Name | Credit | Pre -requisite* |
|---|---|---|---|
| CSE3232 | Human Computer Interaction | 3.0 | |
| CSE3233 | Computer Networks | 3.0 | CSE3133 |
| CSE32P4 | Computer Networks Lab | 1.5 | CSE3133 |
| CSE3235 | Computer Peripherals and Interfacing | 3.0 | CSE2232 |
| CSE32P6 | Computer Peripherals and Interfacing Lab | 0.75 | CSE22P3 |
| CSE3237 | Software Engineering | 3.0 | CSE2137 & CSE2234 |
| CSE32P8 | Software Development Project | 1.5 | CSE21P8 |
| CSE32P9 | Technical Writing and Seminar | 1.5 | - |
| **Total Credit** | | **19.25** | |

*Fourth Year First Semester*

| Course Code | Course Name | Credit | Pre -requisite* |
|---|---|---|---|
| CSE4132 | Principles of  Distributed Systems | 3.0 | CSE3233 |
| CSE4133 | Artificial Intelligence | 3.0 | |
| CSE41P4 | Artificial Intelligence Lab | 0.75 | - |
| CSE4135 | Web Engineering | 3.0 | - |
| CSE41P6 | Web Engineering Lab | 1.5 | - |
| CSE4137 | Computer Graphics and Multimedia System | 3.0 | - |
| CSE41P8 | Computer Graphics and Multimedia System Lab | 0.75 | |
| **Total Credit** | | **17** | |

*Fourth Year Second Semester*

| Course Code | Course Name | Credit | Pre - requisite* |
|---|---|---|---|
| CSE4232 | Compiler  Design | 3.0 | CSE3122 |
| CSE42P3 | Compiler Design  Lab | 0.75 | - |
| CSE4234 | Mobile Application Development | 3 | CSE3237 |
| CSE42P5 | Mobile Application Development Lab | 1.5 | |
| CSE4246 | Project/Thesis | 4.0 | - |
| CSE4227 | Comprehensive Viva-Voce | 2.0 | - |
| **Total Credit** | | **17.25** | |

* Learners will be able to register a course(s) after attending the classes and appearing in the examination of the pre-requisite course(s) (if applicable).

**Credit Wise Learning Hour Distribution**

| Credit | Mode of Delivery | |
|---|---|---|
| | Class room learning / Face to Face Session | Web- based lecture, Self- learning, Assignment, Quiz etc. |
| 3.0 ( Theory ) | 24 Hours | 25 Hours |
| 2.0 ( Theory) | 16 Hours | 15 Hours |
| 1.5 ( Laboratory) | 36 Hours | 10 Hours |
| 0.75 ( Laboratory) | 18 Hours | 5 Hours |

**Distribution of Marks**
**Theory Courses**

    (i)      Distribution of marks for each course is as follows:

| Category | Marks % |
|---|---|
| Class Attendance | 5% |
| Assignment/ Case study | 10% |
| Quizzes/ Class test | 15 % |
| Semester Final Examination | 70% |
| Total | 100% |

    (ii)     Number of assignment/case study of a course shall be at least three (3).

    (iii)    At least two quizzes/ class test shall be conducted. Best one shall be considered as final quizzes / class test marks.

**Laboratory Courses**

    (i)      Distribution of marks for each course is as follows:

| Category | | Marks % |
|---|---|---|
| Class attendance | | 10% |
| Lab performance | | 10% |
| Assignment/ case study | | 10% |
| Quizzes/class test | | 10 % |
| Semester final examination | | |
| Problem solving/ Lab test | 40 | |
| Viva-Voce | 10 | 60% |
| Note book on experiment /Lab Report | 10 | |
| Total | | 100% |

(ii) Number of assignment/case study of a course shall be at least three (3).

(iii) At least two quizzes/ class test shall be conducted. Best one shall be considered as final quizzes/class test marks.

**Project Work**

(i) Total one hundred marks are allotted for Project Work. Distribution of marks is as follows:

| Category | Marks % |
|---|---|
| Project Supervisor | 30% |
| Project work | 40% |
| Presentation | 20 % |
| Viva-Voce | 10% |
| Total | 100% |

**Requirements for Obtaining 'B.Sc in CSE' Degree**

(i) Complete 148 credits successfully;

(ii) Obtain a minimum grade of 'D' in each course;

(iii) Secure a minimum 'Cumulative Grade Point Average (CGPA)' of 2.25;

(iv) Complete the program within eight academic years of his/ her first admission year into the program.