

**INSTITUTE OF INFORMATION TECHNOLOGY
UNIVERSITY OF DHAKA**



<http://www.iit.du.ac.bd/>

**BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING
(BSSE)**

1. Institute of Information Technology (IIT)

Institute of Information Technology (IIT), University of Dhaka started its journey in June 2001 to create efficient manpower in information technology. IIT currently offers Bachelor of Science in Software Engineering (BSSE), Master of Science in Software Engineering (MSSE), Master in Information Technology (MIT) and Post Graduate Diploma in Information Technology (PGDIT). Apart from its regular activities, it also produces state-of-the-art researches and those are published in world class journals and conferences.

IIT has a silent ambience and is adjacent to the Dhaka University Science Library. The four-storey red ceramic IIT building contains six software laboratories, one seminar library and two large classrooms. The laboratories and classrooms are air-conditioned and equipped with multimedia, document camera system and Internet facilities.

Under the IT portfolio, skills in areas like database, networking and specially software engineering are in demand in the job market. To fulfill the expanding software industry demands, IIT has come up with the undergraduate program titled as “**Bachelor of Science in Software Engineering**”. Currently, IIT is affiliated with over 20 top software industries in Bangladesh and the course curriculum of IIT is a joint outcome of the academicians as well as the industry leaders.

2. Bachelor of Science in Software Engineering (BSSE)

Software engineering is a systematic and disciplined approach to develop software. It applies computer science, mathematics, general education and business principles and practices to the creation, operation and maintenance of software systems. The Bachelor of Science in Software Engineering (BSSE) degree aims at the development and management of quality measured software systems. It covers detail study that incorporates analysis and design, coding, testing, through to deployment. The BSSE degree provides a methodical, work-integrated study aiming the development, maintenance and operation of software. The degree will be particularly suitable to students with high technical aspirations and strong communication skills.

BSSE program is a four-year industry-oriented degree. Three years of study is followed by a half-year industry placement before the final semester of study. Our students are highly reputable in software industry and as a result each year different software firms seek for our students to recruit them as interns. Students integrate their industry experience within their studies upon return for their final year. This develops strong communication skills together with an outward worldly focus, positive personality and business attitudes among the students. This program enhances students' capability and competence to deliver at different technical roles and management positions.

2.1 Eligibility and Admission

Each applicant must fulfill the admission requirements as laid down by IIT. The Admission Test into the first semester is held annually. Thirty students are enrolled in a year from Dhaka University Ka-Unit merit list. From the beginning, BSSE program is consistently being ranked among the top two subjects according to the subject preference list.

The applicants of Ka-Unit merit list who have secured a minimum of 15 in Mathematics and minimum 15 in Physics, are considered eligible for admission in BSSE program. A student must have minimum 'A' grade in Mathematics and Physics in HSC or equivalent exam.

2.2 Rules and Regulations

2.2.1 Degree Requirements

In order to qualify for the BSSE degree, a student has to meet the following requirements:

- Completion of minimum 144 credits including an internship program.
- A minimum of grade C+ in a Comprehensive Examination.
- Passing of all courses individually with at least D grade.
- Grade Point Average (GPA) of 2.5 or above.

2.2.2 Course Load for BSSE Students

BSSE is full-time course of study and each student must take 18 credits in each semester. Any student failing to take 18 credits in a regular semester will stand withdrawn from the program for that particular semester. An exception to this rule may be made only by the academic committee of IIT. The full-time course load may be relaxed for transfer students or who are enrolling again after withdrawal.

2.2.3 Breakdown of a Semester

The BSSE program is a four-year program consisting of eight semesters. Each semester has duration of six months; the break down is presented as follows:

Weeks	Purpose
14 weeks	Scheduled classes
1 week	Preparation time for examinations
3 weeks	Semester final examination
3 weeks	Result publication
4 weeks	Vacation and holidays
1 week	Supplementary examinations

2.2.4 Class Attendance

- Less than 75% attendance will be treated as non-collegiate student. A non-collegiate student has to apply to the chairman, Regular Program Office to sit for the examination and upon the approval of academic committee, IIT; he/she has to deposit TK. 5000/- (Five Thousand) as fine as per university rules.
- Below 60% attendance, a student should not be allowed to sit for the examination as per university rules.
- Supplementary examination fee per course is TK. 2000/- (Two Thousand)

2.2.5 Unfair Means

Students are strictly forbidden from adopting unfair means. Students who will adopt unfair means will be punished as per rules of the University of Dhaka.

2.3 Grading System

2.3.1 Definition of a Credit

The Credit is defined as follows:

- Most of the courses will consist of both theoretical classes and laboratory works.
- The total number of credits of a course will be distributed for both theoretical classes and laboratory works as follows:

Class	Hours/week
1 Credit Theory	1
1 Credit Laboratory	2

2.3.2 Letter Grade, Grade Points and their Meaning

Grades in each course will be assigned (in accordance with the rules of Faculty of Science, DU/UGC) as mentioned below.

Marks	Letter Grade	Numeric Grade	Comments
80% or above	A+	4.00	Excellent
≥ 75 but $< 80\%$	A	3.75	Better
≥ 70 but $< 75\%$	A-	3.50	Good
$\geq 65\%$ but $< 70\%$	B+	3.25	Above average
$\geq 60\%$ but $< 65\%$	B	3.00	Average
$\geq 55\%$ but $< 60\%$	B-	2.75	Below average
$\geq 50\%$ but $< 55\%$	C+	2.50	Satisfactory
$\geq 45\%$ but $< 50\%$	C	2.25	Not satisfactory
$\geq 40\%$ but $< 45\%$	D	2.00	Pass
Less than 40%	F	0.00	Fail
	I		Incomplete
	W		Withdrawn

2.3.3 Promotion to the next Semester

- The overall CGPA obtained by a student in the previous semester must not be less than **2.5**.
- A student will have to secure at least grade D in each course in the previous semester.
- Students who achieved overall CGPA **2.5** but **F** in any course will have to sit for a supplementary exam and he/she will get no more than **B+** in that course.
- Students failed to get promoted will retake that semester with the following batch. However, a student may retake only those courses for which he/she got 'F' grade.

3 BSSE Curriculum

3.1 Course Structure

In order to understand the program structure, the semester wise credit distribution is shown below. To address individual subjects, we have adopted the following course prefixes.

Semester 1

Course Code	Course Title	Credit	Theory	Lab
CSE101	Structured Programming	3	1	2
CSE 102	Discrete Mathematics	3	3	0
STAT 103	Probability and Statistics for Engineers-I	3	3	0
MATH 104	Calculus and Analytical Geometry	3	3	0
GE 105	Sociology	3	2	1
SE 106	Introduction to Software Engineering	3	3	0
6 Courses		18	15	3

Semester 2

Course Code	Course Title	Credit	Theory	Lab
CSE 201	Data Structure & Algorithm	3	1	2
EEE 202	Digital Systems Design	3	2	1
STAT 203	Probability and Statistics for Engineers-II	3	3	0
MATH 204	Ordinary Differential Equations	3	3	0
SE 205	Theory of Computing	3	2	1
SE 206	Object Oriented Concepts I	3	2	1
6 Courses		18	13	5

Semester 3

Course Code	Course Title	Credit	Theory	Lab
CSE 301	Combinatorial Optimization	3	2	1
CSE 302	Computer Architecture	3	2	1
CSE 303	Data Communication and Networking	3	2	1
MATH 304	Numerical Analysis for Engineers	3	2	1
SE 305	Software Project Lab I	3	0	3
SE 306	Object Oriented Concepts II	3	2	1
6 Courses		18	10	8

Semester 4

Course Code	Course Title	Credit	Theory	Lab
CSE 401	Operating Systems and System Programming	3	2	1
GE 402	Business Psychology	3	2	1
CSE 403	Computer Networking	3	2	1

CSE 404	Database Management System-I	3	2	1
BUS 405	Business Studies for Engineers	3	3	0
SE 406	Software Requirements Spec. and Analysis	3	2	1
6 Courses		18	13	5

Semester 5

Course Code	Course Title	Credit	Theory	Lab
CSE 501	Parallel Computing	3	2	1
CSE 502	Web Technology	3	1	2
BUS 503	Business Communications	3	2	1
CSE 504	Database Management System-II	3	1	2
SE 505	Software Project Lab II	3	0	3
SE 506	Design Patterns	3	2	1
6 Courses		18	8	10

Semester 6

Course Code	Course Title	Credit	Theory	Lab
CSE 601	Distributed Systems	3	1	2
BUS 602	Management Information Systems	3	2	1
GE 603	Information Systems Ethics	3	1	2
CSE 604	Artificial Intelligence	3	2	1
SE 605	Software Testing and Quality Assurance	3	2	1
SE 606	Software Design and Analysis	3	2	1
6 Courses		18	10	8

Semester 7

Course Code	Course Title	Credit	Theory	Lab
SE 701	Internship	18	0	18
1 Course		18	0	18

Semester 8

Course Code	Course Title	Credit	Theory	Lab
SE 801	Project	6	0	6
CSE 802	Computer, Data and Network Security	3	2	1
SE 803	Software Project Management	3	2	1
CSE / SE / BUS 8XX	Elective	3	2	1
CSE / SE / BUS 8XX	Elective	3	2	1
5 Courses		18	8	10

3.2 General Education (GE) Courses

The GE course structure is designed to enhance the students' knowledge and develop their appreciation for social understanding and scientific focus. The courses are listed below, from which, we will offer three courses.

No.	Course Code	Course Title
1.	GE 105	Sociology
2.	GE 107	Physics
3.	GE 108	Chemistry
4.	GE 109	Biology
5.	GE 110	History
6.	GE 402	Business Psychology
7.	GE 603	Information Systems Ethics

3.3 Elective Courses

The elective courses enrich students' knowledge regarding advanced studies and research. More promising course might be included here based on demand and the availability of the resource personnel.

No.	Course Code	Course Title
1.	CSE 823	Embedded Systems
2.	BUS 824	Numeric Computation for Financial Modeling
3.	CSE 825	Data Mining and Warehousing
4.	BUS 827	Enterprise Information Systems
5.	CSE 829	Pattern Recognition and Image Processing
6.	CSE 830	Mobile and Wireless Computing
7.	CSE 831	Computer Graphics and Multimedia
8.	CSE 837	Machine Learning
9.	CSE 839	Human Computer Interaction
10.	CSE 840	Information Retrieval
11.	BUS 842	Strategic Management
12.	SE 843	Software Metrics
13.	SE 8XX	Software Maintenance and Evolution
14.	SE 8XX	Software Re-engineering
15.	SE 8XX	Client-Server Architecture
16.	SE 8XX	Software Verification and Validation
17.	SE 8XX	Risk and Reliability Management
18.	SE 8XX	Architecture and Modeling of Software Systems

19.	SE 8XX	Mining Large Scale Software Data
20.	SE 8XX	Software Artifact Analysis
21.	SE 8XX	Software Configuration Management
22.	SE 8XX	Software Reusability

** Course code 8XX will be mentioned later.

3.4 Comprehensive Examination

A Comprehensive Examination is taken to evaluate the students' understanding of their major areas of study (Software Engineering courses). Students must earn a minimum of grade 'C+' in this examination. The Comprehensive Examination grade is shown on the Grade Sheet but is not included in the calculation of CGPA.

The Comprehensive Examination is usually taken two weeks before the end of the final semester. If a student fails the Comprehensive Examination, he/she may sit for a retake which is allowed only once, unless otherwise decided by the Academic Committee.

3.5 Internship Program

To gain the industry experience, students of seventh semester will be assigned with a well-known organization of Information Technology industry. Students, upon completion of 108 credits (36 different courses), will have an acceptable theoretical knowledge. With such background, students will move to industry to implement the knowledge he or she gathered and at the same time to be aware of the industry trend and their working environment. After completion of the internship, students will be back to the institution and have to present a report on their domain of work in the respective organization. Students will also be evaluated from the assigned organization.

3.6 Applicability of the Curriculum and Rules

The Institute of Information Technology reserves the right to make, at any time without notice, changes to programs, courses, regulations, degree requirements, fees or any other information or statements contained in this booklet. No responsibility will be borne by the University of Dhaka or by the Institute of Information Technology for any adjustment or expenses resulting from such changes.

4 Final Remarks

The software industry is always looking for qualified engineers from the Universities. Instead of going with the traditional systems, IIT is proposing an industry-oriented program. IIT believes, BSSE will work more like a bridge between the software industry and the educational institutes.

The courses are designed in such a way that within the first six semesters each student will acquire the knowledge to go to the industry and work. Upon completion of 6 months of internship at the industry, students will come back to the institute for another semester of study, and thereby will relate their industry experiences with the theory. At the end, a BSSE fresh graduate will be a complete software engineer who can go and start working in the industry.

Software Engineering is an important stream of typical computer science, what IIT is planning to address. There are other streams such as, database, networking, etc., which have acute market demands. The future goal of IIT is set to produce quality practitioners in those streams as well.