SOFTWARE ENGINEERING (BS)

Program Overview
Bachelor of Science Degree

The Bachelor of Science Degree in Software Engineering builds upon the knowledge of the associate degree to give students a broader exposure to programming languages, especially object-oriented languages, and deeper experience in database, web and mobile design, development and implementation.

A key feature of this program is a senior project and the choice between additional coursework or a cooperative learning experience in the final two terms. In the senior project, each student works with a faculty member to develop and present a project that focuses in depth on a particular topic and allows students to bring together knowledge gained throughout the program.

The cooperative learning experience based on industry demand and with the approval of the IT Department Chair, may be available during the final two terms of the program. These experiences, which may be paid or unpaid, allow students to receive college credit and to work off campus in an organization where they will practice and enhance their technical skills. Typically, and when available, students will work in the same organization for the final two terms of the bachelor's degree program.

Upon completion of this program, graduates will be prepared to apply for positions such as system developer, analyst, programmer, database specialist, software engineer, web programmer, planner or developer. Students may also choose to continue into the NEIT Master of Science in Information Technology degree program.

Curriculum

Course	Title	Quarter Credit Hours
Term VII		
IT 379	Cloud Foundations	4
SE 379	React Programming	4
SE 385	Java	4
EN 322	Argumentative Research Writing (COM Core) [1]	4
	Quarter Credit Hours	**16**
Term VIII		
SE 380	React Native	4
SE 394	Algorithms in Software Engineering	4
SE 402	Design Patterns	4
Elective	300-400 Level Humanities or 200 Level Foreign Language Core [1]	4
	Quarter Credit Hours	**16**
Term IX		
IT 374	IT Project Management	3
SE 398	Advanced SQL	3
SE 426	Web Services	4
MA 210	Technical Math II (MA/SCI Core) [1,2]	4
EN 421	Technical Communications (COM Core) [1]	4
	Quarter Credit Hours	**18**
Term X		
SE 373	Advanced Open Source Web Development	4
SE 407	Advanced .NET	4
SE 417	Software Security	3
MA 300	Statistics (MA/SCI Core) [1]	4
	Quarter Credit Hours	**15**
Term XI		
SE 414	Introduction to Senior Project	3
Elective	300-400 Level Social Sciences Core [1]	4
Choose one of the following options:		6-7
Option 1		
SE 377	Cloud-Based Application Development	
SE 419	Big Data	
Option 2		
IT 415	Cooperative Learning I	
	Quarter Credit Hours	**13-14**
Term XII		
SE 425	Senior Project	3
Elective	300-400 Level Humanities or 200 Level Foreign Language Core [1]	4
Choose one of the following options:		7
Option 1		
SE 428	Emerging Technologies in Software Engineering and Web Development	3
SE 429	Applied Machine Learning	
Option 2		
IT 425	Cooperative Learning II	
	Quarter Credit Hours	**17**
	Total Quarter Credit Hours	**95-96**

[1] Liberal Arts Core.
[2] If MA 210 Technical Math II has already been taken, a 300-level Math/Science Core course must be taken.

Legend

C = Number of lecture hours per week

L = Number of laboratory hours per week

T = Total Quarter Credit Hours where each lecture hour per week is one credit, every 2-4 laboratory hours are one credit depending on the expected amount of pre- or post-lab work.

All bachelor's degree students are required to take 28 credits of liberal arts and math/science courses as selected from the liberal arts core. See the course descriptions section of this catalog for a list of the core area courses.

*The cooperative learning experience based on industry demand and with the approval of the IT Department Chair, may be available during the final two terms of the program.

Check with your advisor with any questions.

Note: If you had MA 210 Technical Math II in your AS program, you will need to take a MA/SCI Core Elective in its place.

Subject to change.

Program Mission, Goals, and Outcomes

Program Mission

The mission of the Bachelor of Science Degree program in Information Technology Software Engineering is to provide students with an opportunity to further their studies in Software Engineering. Graduates of this program are ready to start a career in Software Engineering and are also prepared for lifelong learning.

Program Goals

1. Provide various learning experiences with an emphasis on self-learning.
2. Provide students with an opportunity to solve software engineering problems in the areas of server-side web development, database driven web applications, and using advanced programming techniques.
3. Present students with an in-depth look a software design patterns, component-based designs and software architectures.
4. Provide students with opportunities to develop their critical thinking skills and social skills as it applies to software development and programming principles.
5. Provide an environment that encourages self-learning and the continuation of each student's education beyond graduation with the goal of furthering each student's ability to adapt to and incorporate new concepts, ideas, and evolving technologies.

Program Outcomes

Students will:

1. Design and implement software solutions based on sound software engineering principles in the areas of mobile, cloud and web development.
2. Develop a software engineering application and be responsible for its management, design and implementation.
3. Analyze and effectively visualize large amounts of data using current data science methodologies.
4. Utilize current software engineering processes to manage software for a variety of different platforms.
5. Demonstrate effective oral and written communications with supervisors, team members and clients. In particular, they should exhibit lucid, clear and concise technical and professional communication as well as be able to communicate complex technical ideas in layman's terms to non-technically trained people.
6. Respect different cultures, customs, and professional technical methods and procedures inherent in an industry with many differences on locality or region.

Q&A and Technical Standards
Questions & Answers

1. When do my classes meet?
Day Classes: Technical classes normally meet for at least three hours a day for up to five days a week. Classes normally begin in the early morning (7:45 a.m.), late morning (usually 11:25 a.m.), or mid-afternoon. The time slot for your program may vary from term to term.

Evening Classes: Technical classes meet on the average of three nights a week, although there may be times when they will meet four nights a week. Classes normally begin at 5:45 p.m.

In addition, to achieve your bachelor's degree, you will take a total of approximately seven liberal arts courses, which will be scheduled around your program schedule over the course of your entire program. Each liberal arts course meets approximately four hours per week. Liberal arts courses are offered days, evenings, and Saturdays.

At the beginning of each term you will receive a detailed schedule giving the exact time and location of all your classes. The university requires that all students be prepared to take classes and receive services at any of NEIT's locations where the appropriate classes and services are offered.

When a regularly scheduled class falls on a day which is an NEIT observed holiday (Columbus Day, Veterans Day, Martin Luther King, Jr. Day, and Memorial Day), an alternate class will be scheduled as a make up for that class. The make up class may fall on a Friday. It is the student's responsibility to take note of when and where classes are offered.

2. How large will my classes be?
The average size for a class is about 20 to 25 students; however, larger and smaller classes occur from time to time.

3. How much time will I spend in lab?
Almost half of your technical courses consist of laboratory work. In order for you to get the most out of your laboratory experiences, you will first receive a thorough explanation of the theory behind your lab work.

4. Where do my classes meet?
Students should be prepared to attend classes at any of NEIT's classroom facilities: either at the Post Road, Access Road, or East Greenwich campus.

5. How long should it take me to complete my program?
To complete your degree requirements in the shortest possible time, you should take the courses outlined in the prescribed curriculum. For a typical six-term curriculum, a student may complete the requirements in as little as 18 months.

To complete all your degree requirements in the shortest time, you should take at least one liberal arts course each term.

Students may also elect to complete some of their liberal arts requirements during Intersession (except for EN courses), a five-week term scheduled between Spring and Summer Terms. Students will not be assessed any additional tuition for liberal arts courses taken during the Intersession but may be assessed applicable fees.

Students wishing to extend the number of terms needed to complete the required technical courses in their curriculum will be assessed additional tuition and fees.

6. Is NEIT accredited?
NEIT is accredited by the New England Commission of Higher Education. Accreditation by NECHE is recognized by the federal government and entitles NEIT to participate in federal financial aid programs. Some academic departments have specialized professional accreditations

in addition to accreditation by NECHE. For more information on accreditation, see NEIT's catalog.

7. Can I transfer the credits that I earn at NEIT to another college?

The transferability of a course is always up to the institution to which the student is transferring. Students interested in the transferability of their credits should contact the Office of Teaching and Learning for further information.

8. Can I transfer credits earned at another college to NEIT?

Transfer credit for appropriate courses taken at an accredited institution will be considered upon receipt of an official transcript for any program, biology, science, and mathematics courses in which the student has earned a "C" or above within the past three years and for English or humanities courses in which the student has earned a "C" or above within the last ten years. An official transcript from the other institution must be received before the end of the first week of the term for transfer credit to be granted for courses to be taken during that term. Students will receive a tuition reduction for the approved technical courses based on the program rate and will be applied against the final technical term of the curriculum's tuition amount. No tuition credit is provided for courses which are not a part of the technical curriculum.

9. What is the "Feinstein Enriching America" Program?

New England Institute of Technology is the proud recipient of a grant from the Feinstein Foundation. To satisfy the terms of the grant, the College has developed a one-credit community enrichment course which includes hands-on community enrichment projects. The course can be taken for a few hours per term, spread over several terms. Students who are already engaged in community enrichment on their own may be able to count that service towards course credit.

10. How many credits do I need to acquire my Financial Aid?

In order to be eligible for the maximum financial aid award, you need to maintain at least 12 credits per academic term.

11. What does my program cost?

The cost of your program will be as outlined in your enrollment agreement, along with your cost for books and other course materials. Students who decide to take more terms than the enrollment agreement describes to complete the technical courses in their curriculum will be subject to additional fees and possible additional tuition costs. Students who elect to take the technical portion of the degree requirements at a rate faster than the rate prescribed in the curriculum and the enrollment agreement will be assessed additional tuition.

Students who require prerequisite courses will incur additional tuition and fees above those outlined in their enrollment agreement.

If a student elects to take a course(s) outside of the prescribed curriculum, additional tuition and fees will be assessed.

Remember, students who withdraw and re-enter, one time only, pay the tuition rate that was in effect for them at the time of their last day of attendance for up to one year from their last day of attendance. Second re-entrees and beyond pay the tuition rate in effect at the time they re-enter. The most economical way for you to complete your college degree is to begin your program now and continue your studies straight through for the six terms necessary to complete your degree requirements.

12. What kind of employment assistance does NEIT offer?

The Career Services Office assists NEIT students and graduates in all aspects of the job search, including resume writing, interviewing skills, and developing a job search strategy. Upon completion of their program, graduates may submit a resume to the Career Services Office to be circulated to employers for employment opportunities in their fields. Employers regularly contact us about our graduates. In addition, our Career Services Office contacts employers to develop job leads. A strong relationship with employers exists as a result of our training students to meet the needs of industry for over fifty years. No school can, and NEIT does not, guarantee to its graduates employment or a specific starting salary.

13. Where will job opportunities exist?

Graduates have obtained employment in the local area. However, one of the most exciting aspects of this program is the ability to look nationally for employment opportunities.

14. What kind of jobs will I be qualified to look for?

Generally, jobs will exist in the entry-level positions in the computer industry. System developer, analyst, entry-level programmer, database specialist, computer technician, computer librarian, web developer, network security specialist, LAN manager, network administrator, network engineer or network analyst are just some of the job choices available to a graduate with an associate degree. Upon completion of a bachelor's degree at NEIT, positions on the management level become attainable.

Technical Standards

These technical standards set forth by the Computer Science department establish the essential qualifications considered necessary for students admitted to the program. The successful student must possess the following skills and abilities or be able to demonstrate they can complete the requirements of the program with or without reasonable accommodation, using some other combination of skills and abilities.

Cognitive Ability

- Good reasoning and critical thinking skills.
- Ability to learn, remember and recall detailed information and to use it for problem solving.
- Ability to deal with materials and problems such as organizing or reorganizing information.
- Ability to use abstractions in specific concrete situations.
- Ability to separate complex information into its component parts.
- Ability to perform tasks by observing demonstrations.
- Ability to perform tasks by following written instructions.
- Ability to perform tasks following verbal instructions.
- Possession of basic keyboarding skills and knowledge of computer programs.

Communications Skills

- Ability to speak in understandable English in a classroom situation on a one-on-one basis as well as before a group.
- Ability to communicate effectively with faculty and other students.
- Ability to demonstrate and use the knowledge acquired during the classroom training process.
- Ability to verbally express technical concepts clearly and distinctly.
- Ability to express thoughts clearly.

Adaptive Ability

- Ability to remain calm in the face of computer lab equipment and/or software failure.
- Ability to maintain emotional stability and the maturity necessary to interact with members of the faculty and students in a responsible manner.
- Ability to tolerate the differences in all students, faculty, and administration.
- Ability to follow instructions and complete tasks under stressful and demanding conditions.
- Ability to adapt in a positive manner to new and changing situations with an open mind and flexibility.
- Ability to think clearly and act quickly and appropriately in stressful situations.

Physical Ability

- Ability to sit continuously at a personal computer for long periods of time in order to learn and become proficient in computer programming and networking.
- Ability to perform learned skills independently, with accuracy and completeness within reasonable time frames in accordance with classroom and business procedures.

Manual Ability

- Sufficient motor function and sensory abilities to participate effectively in the classroom laboratory.
- Sufficient manual dexterity and motor coordination to coordinate hands, eyes and fingers in the operation of computers and business equipment.

Sensory Ability
Visual

- Acute enough to see clearly and interpret the contents on the computer screen.

Degree Progress Checklist
Software Engineering - BS

Degree Progress Checklists

- For students entering Sequence A July 2023 or later
- For students entering Sequence B July 2023 or later

- For students entering Sequence A April 2022 to June 2023
- For students entering Sequence B April 2022 to June 2023

- For students entering Sequence A April 2021 to March 2022
- For students entering Sequence B April 2021 to March 2022

- For students entering Sequence A January 2021 to March 2021
- For students entering Sequence B January 2021 to March 2021

- For students entering Sequence A April 2020 to December 2020
- For students entering Sequence B April 2020 to December 2020