

NORTHERN



AMENDED 2015-16 Catalog (Revised 1/2/16)

Bachelor of Engineering (BEng) INFORMATION ENGINEERING TECHNOLOGY

The Bachelor of Engineering in Information Engineering Technology Program is accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET, www.abet.org. Accreditation is proof that the quality of an academic program meets the standards of the profession.

The curriculum of the Bachelor of Engineering (BEng) in Information Engineering Technology is designed for those students who intend to launch a career in the design, installation, maintenance, and repair of computing technologies. Coursework in the program is practice-orientated and prepares students to work in a variety of computer-intensive environments, such as technical organizations, small or large businesses, product design or manufacturing companies, and data-directed services. The breadth of training in hardware, software, troubleshooting equipment, and other computer tools will enable the graduate to work in a variety of roles in such environments as software, network, database, and web designer. Additionally, the graduate will have the ability to work as network manager and administrator, project manager, applications developer, test and integration manager and technologist in business applications. The graduate of this curriculum will be versed in mathematics, physics, computer science, and business fundamentals, giving him/her the fundamental knowledge for further graduate studies in Computer Science, Computer Engineering, or Telecommunication Systems.

Failure to maintain an overall GPA of 2.00 or better in all coursework will be sufficient cause for being dropped from the program.

The program objectives are the following:

1. Graduates will be situated in growing careers involving design, development, and support of Information Technology Systems.
2. Graduates will perform effectively individually and in teams.
3. Graduates will have demonstrated involvement in high-level technical and leadership roles.
4. Graduates will have accumulated technical expertise to remain globally competitive.

Completion of this program should result in the following student outcomes:

1. An appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines
2. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology
3. An ability to conduct, analyze and interpret experiments, and apply experimental results to improve processes
4. An ability to apply creativity in the design of systems, components, or processes appropriate to program educational objectives
5. An ability to function effectively on teams
6. An ability to identify, analyze, and solve technical problems
7. An ability to communicate effectively
8. A recognition of the need for, and an ability to, engage in lifelong learning
9. An ability to understand professional, ethical, and social responsibilities
10. A respect for diversity and knowledge of contemporary professional, societal, and global issues
11. A commitment to quality, timeliness, and continuous improvement

12.

The application of Computer and network hardware, operating systems, system and network administration, programming languages, applications software, and databases in the building, testing, operation, and maintenance of hardware and software systems

13.

The application of electrical, electronic, telecommunications, and digital signal propagation fundamentals in the building, testing, operation and maintenance of hardware and software systems

14.

The ability to design, implement, maintain, and provide for the security of facilities involved with the processing and transfer of information

15.

The ability to apply project management techniques to facilities that process and transfer information

16.

The ability to apply discrete mathematics, and probability and statistics in the support of facilities that process and transfer information

Students are advised not to attempt upper division coursework (300 and 400-level classes) unless they have earned a GPA of 2.50 or better in all IT, CS, and CT coursework taken at the 100 and 200-level.

GENERAL EDUCATION (38 CR)

Area I. Communications (9 cr)

ENG 111 English Composition I (3)
ENG 116 Technical Writing (3)
SPCH 130 Public Speaking (3)

Area II. Mathematics (3 cr)

MATH 145 Introduction to Probability and Statistics (3)

Area III. Laboratory Sciences (8 cr)

PHYS 215/L Engineering Physics I with lab (4)
Elective Laboratory Science (4)

You must select a course from the following list:

ASTR 110/L Intro to Astronomy with Lab (4)
PHYS 122/L Applied Physics II with lab (4)
PHYS 215/L Engineering Physics I with lab (4)
PHYS 216/L Engineering Physics II with lab (4)
CHEM 121/L General Chemistry I with Lab (4)
ES 112/L Introduction to Environmental Science with Lab (4)
BIOL 110/L Current Topics in Biology with Lab (4)
GEOL 101/L Physical Geology with Lab (4)

Area IV. Social/Behavioral Sciences (6–9 cr)

ECON 201 Microeconomics (3)
Elective (3-6)* *Choose electives from Gen Ed Area IV on page 27.*

Area V. Humanities and Fine Arts (6–9 cr)

Second Language (3)
Electives (3-6) *Choose electives from Gen Ed Area V on page 28.*

Area VI. First Year Experience (3 cr)

FYE 101 First Year Experience (3)

SUPPORT COURSES (8 CR)

MATH 162E Calculus I (4)
MATH 163E Calculus II (4)

PROGRAM REQUIREMENTS (77 CR)

Computer Science (3)

CS 201 Math Foundations of Computer Science (3)

Electrical, Electronic, and Computer Engineering (37 cr)

EECE 105L Microcomputer Systems I (3)
EECE 111 Introduction to Web Programming (3)
EECE 132 Computer Networks I (3)
EECE 152L Computer Programming I (3)
EET 200/L Electrical Systems I with Lab (4)
EECE 230 Introduction to Routing and Switching (3)
EECE 231L Intermediate Programming (3)
EECE 329 Human Computer Interaction (3)
EECE 330 Computer Networks II (3)
EECE 351 Advanced Programming I (3)
EECE 355 Web Engineering (3)
EECE 440 Advanced Computer Networks (3)

Information Technology (15 cr)

IT 250 Introduction to Databases (3)
IT 350 Database Management (3)
IT 410 Information Assurance/Security (3)
IT 490 IT Capstone I (3) (WIC)
IT 491 IT Capstone II (3)

Business (4 cr)

ENGR 480 Engineering Management and Project Management (4)

Support Technologies (18 cr)

ENGR 110L Introduction to Engineering (2)
ENGR 120L Introductory Math for Engineering Applications (4)
Electives EECE/CS/IT/MATH/ENGR courses (at least 9 upper division) (12)

TOTAL CREDITS: 123

SUGGESTED SEQUENCE OF COURSES

HFA = Humanities & Fine Arts (Area V)
SBS = Social/Behavioral Science (Area IV)

First Semester (15 crs)

FYE 101 First Year Experience (3)
ENGR 110L Introduction to Engineering (2)
EECE 111 Introduction to Web Design (3)
ENGR 120L Introductory Math for Engineering Applications (4)
EECE 132 Computer Networks I (3)

Second Semester (17 crs)

ENG 111 English Composition I (3)
EECE 152L Computer Programming I (3)
EET 200 Electrical Systems I with Lab (4)
PHYS 215/L Engineering Physics I with lab (4)
EECE 230 Introduction to Routing and Switching (3)

Third Semester (16 cr)

EECE 105L Microcomputer Systems (3)
ENG 116 Technical Writing (3)
MATH 145 Introduction to Probability and Statistics (3)
IT 250 Introduction to Databases (3)

Elective Laboratory Science (4)

Fourth Semester (15 cr)

SPCH 130 Public Speaking (3)
ECON 201 Microeconomics (3)
EECE 231 Intermediate Programming (3)
EECE/IT/CS/MATH/ENGR Elective lower or upper division (3)
HFA Elective (3)

Fifth Semester (16 cr)

MATH 162 Calculus I (4)
CS 201 Math Foundations of Computer Science (3)
EECE 329 Human Computer Interaction (3)
EECE 330 Computer Networks II (3)
IT 350 Database Management (3)

Sixth Semester (16 cr)

MATH 163 Calculus II (4)
EECE 350 Advanced Programming (3)
EECE 355 Web Engineering (3)
ENGR 480 Engineering Management and Project Management (3)
EECE/CS/IT/MATH/ENGR Elective 3XX/4XX (3)

Seventh Semester (16 cr)

EECE 440 Advanced Computer Networks (3)
IT 490 Capstone I (4)
SBS Elective (3)
Second Language (3)
EECE/CS/IT/MATH/ENGR Elective 3XX/4XX (3)

Eighth Semester (12 cr)

IT 410 Information Assurance/Security (3)
IT 491 Capstone II (3)
SBS or HFA Elective (3)
EECE/CS/IT/MATH/ENGR Elective 3XX/4XX (3)
