The Computer Engineering program provides students with a solid basis in computer engineering and its underlying mathematics and science within the framework of a liberal arts education. We prepare students for immediate professional employment, graduate study, and entry into related professions. We believe that the rigor and depth of a computer engineering education combined with a broad study of the liberal arts provides an excellent background for students who wish to enter professions such as medicine, law, and business administration as well as engineering itself. Through our required international component, our emphasis on undergraduate research, and the personal attention that we give to each student, we educate well-rounded members of society who are prepared to excel in an increasingly multicultural and technological world.

The Computer Engineering program is offered with significant parts of the curriculum supported by the Department of Computer Science. The major is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. Educational objectives and program outcomes are listed on the website: ece.union.edu

Requirements for the Major: a total of 40 courses including the following:

1. Math and Science: (MTH-113*, 115, PHY-120, 121) or (IMP-111, 112, 113) or (IMP-120, 121); MTH-130, (MTH-197 or 199); one math elective from (MTH-117**, 127, 138, 221, 235, or 340); one science elective numbered 100 or higher (CHM-101, PHY-122 or 123 are recommended);
   * Other calculus sequences are possible depending upon a student’s background.
   ** MTH-117 may be taken only by students who did not take IMP-113 or IMP-121
2. Engineering Science: ESC-100;
3. Computer Engineering Core: ECE-118, 225, 240, 241, 248, 351; one from (CSC-103-109), CSC-150, 250, 260, 270, (333 or 335); ECE/CSC-318, (336/236 or 337/237), 352;
4. Computer Engineering Electives: 3 additional CSC or ECE courses numbered 300 or higher. Students may also enroll in graduate engineering courses offered through Union Graduate College. Please see the Union Graduate College catalog for course descriptions and joint degree program options.
6. Electives: 11 elective courses should be chosen in consultation with the student’s advisor to satisfy the Common Curriculum and to enhance educational objectives. These elective courses, in addition to the 5 electives in math, science and computer engineering, can be customized to complete a minor and pursue specific interests.

Sample schedule starting with Math 113: Students with different math backgrounds will have slightly different math sequences.

First Year
ESC-100, MTH-113, MTH-115, PHY-120, CSC-103-109** MTH-130, PHY-121, Electives (3)*

Second Year
ECE-118, ECE-225, MTH-197 or MTH-199**, CSC-150, ECE-240, Science elective, CSC-250, ECE-241***, Electives (2)*

Third Year****
ECE-351, ECE-336/CSC-236 or 337/237, CSC-260, CSC-270, ECE/CSC-318, ECE/CSC-352, CSC-335, ECE-497 (1/2), Electives (2)*

Fourth Year
ECE or CSC elective, ECE or CSC elective, ECE-498 (1/2), ECE-499, ECE or CSC elective, ECE-248, Math elective, Electives(4)*

* Electives should be chosen to enhance educational objectives and meet remaining Common Curriculum (General Education) requirements. Students should work with their academic advisor to develop an appropriate plan of study.
** One course from CSC-103-109 and either MTH-197 or 199 should be taken before the winter term of the second year.
*** ECE-241 may be taken in the fall or spring term of the junior year.
The fall term of the third year is the most common term for going on a full term abroad. With appropriate planning, students may go on winter and spring terms abroad as well. Students who do go on a fall term abroad may take ECE-351 and ECE-336/CSC-236 during the fall term of their senior year.

Requirements for Honors: In addition to meeting all of the general college requirements for honors, candidates for honors in computer engineering must present their senior project at the Steinmetz Symposium.

Requirements for the Minor: The following six courses — ECE-118, 225; one from (CSC-103-109), CSC-150; one from (ECE/CSC-318, 352) and one other from (ECE/CSC-318, 336/236, 337/237, 352, CSC-250, 270).

Requirements for the Five-Year Combined BS in Computer Engineering and MS in Electrical Engineering: Union undergraduate students may apply to this program offered in conjunction with Union Graduate College of Union University where both a B.S. and an M.S. degree are earned in five years. Students are encouraged to apply during sophomore year but no later than the end of the fall term of their senior year. A 3.0 overall GPA is expected for admission. Students enrolled in the program may count up to three Electrical or Computer Engineering courses toward both degrees. A petition requesting overlapping degree credit must be approved by the undergraduate and graduate advisors and filed with the graduate office. The Master of Science program is described in the catalog of the Union Graduate College at www.uniongraduatecollege.edu.

Computer Engineering Course Listings

See the course listings in the Electrical Engineering section for ECE courses and in the Computer Science section for CSC courses.