Each of the following as they relate directly to computing:

Computer science and engineering majors will be able to do

Graduates possess the following at the time of graduation:

Each program has its own set of articulated educational

- an ability to identify, formulate, and solve complex
  engineering problems by applying principles of
  engineering, science, and mathematics;
- an ability to apply engineering design to produce solutions
  that meet specified needs with consideration of public
  health, safety, and welfare, as well as global, cultural,
  social, environmental, and economic factors;
- an ability to communicate effectively with a range of
  audiences;
- an ability to recognize ethical and professional
  responsibilities in engineering situations and make
  informed judgments, which must consider the impact of
  engineering solutions in global, economic, environmental,
  and societal contexts;
- an ability to function effectively on a team whose
  members together provide leadership, create a
  collaborative and inclusive environment, establish goals,
  plan tasks, and meet objectives;
- an ability to develop and conduct appropriate
  experimentation, analyze and interpret data, and use
  engineering judgment to draw conclusions; and
- an ability to acquire and apply new knowledge as needed,
  using appropriate learning strategies.

Computer science and engineering majors will be able to do

each of the following as they relate directly to computing:

- analyze a complex computing problem and apply
  principles of computing and other relevant disciplines to
  identify solutions;
- design, implement, and evaluate a computing-based
  solution to meet a given set of computing requirements in
  the context of the program’s discipline;
- communicate effectively in a variety of professional
  contexts;
- recognize professional responsibilities and make informed
  judgments in computing practice based on legal and
  ethical principles;
- function effectively as a member or leader of a team
  engaged in activities appropriate to the program’s
  discipline; and
- apply computer science theory and software development
  fundamentals to produce computing-based solutions.

Each program emphasizes a broad understanding of

fundamental principles common to all engineering disciplines

and provides students with the opportunity to specialize in

a selected engineering discipline. All programs build on the

University’s research strengths. Program flexibility is provided

by a curriculum in which each student develops engineering

competency within a particular academic program and

complements it with a tailored thematic option in support of

chosen career objectives—for example, engineering practice,

project management, research, and development.

This section of the Catalog provides information about

requirements that all B.S.E. students must fulfill, regardless of

their engineering major, as well as admission information.

Engineering students may earn more than one B.S.E. degree.

They also may combine undergraduate degree programs to

earn a B.S.E. and a degree in the College of Liberal Arts and

Sciences or the Tippie College of Business, or a combined

B.S.E./M.S. in urban and regional planning, or a combined

B.S.E./M.S. in engineering; see “Combined and Dual Degrees”
in the Bachelor of Science in Engineering, B.S.E. section of the
Catalog.

Undergraduate Majors, Minors,
and Certificates

Majors

The College of Engineering has six departments and offers

eight undergraduate B.S.E. majors. View the B.S.E. majors

under each of the College of Engineering departments in the
Catalog.

Minors

The College of Engineering does not offer a minor.

Engineering students may earn minors in a number of

programs offered by other undergraduate colleges at the

University of Iowa. For descriptions of minors and their

requirements, view Find Your Program on the General Catalog
website and select undergraduate minors.

Certificates

The College of Engineering offers three undergraduate

certificate programs. Engineering students also may earn

certificates offered by colleges across the University. The

College of Engineering partners with the Tippie College

of Business to offer the Certificate in Technological

Entrepreneurship, which is tailored specifically for engineering

students who intend to start and operate their own business

or who would like to understand and learn about managing

innovation in business environments. The college also

offers the Certificate in Artificial Intelligence, Modeling and

Simulation in Engineering and the Certificate in Naval Science

and Technology. Other certificates of particular interest to

engineering students include the Certificate in International

Business (Tippie College of Business) and the Certificate

in Sustainability (University College). For descriptions of

certificates and their requirements, view Find Your Program

on the General Catalog website and select undergraduate

certificates.

Cooperative Education and
Internship Program

The Engineering Cooperative Education and Internship

Program supports students as they explore and develop their

careers through periods of professional practice. These are
professional, engineering-related experiences in business, industry, education, or government that are recognized by the College of Engineering. Experiences range from 10-week summer internships to multiterm co-ops. Students find co-ops and internships in several ways, including career fairs, job search sites, applying directly through the company’s website, networking, personal connections, and Handshake (the University of Iowa’s primary online recruiting system).

All students in the College of Engineering are eligible to participate in the co-op and internship program upon completion of one full semester at the University. Students are encouraged to begin their search early so that they may acquire a co-op or internship experience starting the summer after their first or second year. Students have completed co-op and internship assignments at many companies around the country and world.

Internships and co-ops may be documented on the transcript when students follow the appropriate registration steps. For further details, see Engineering Career Services on the College of Engineering website.

**Engineering Grand Challenges Scholars Program**

The Engineering Grand Challenges Scholars Program (GCSP) is designed to inspire students to develop innovative engineering solutions to the 14 Grand Challenges facing society in this century, as identified by the National Academy of Engineering (NAE). Students are required to complete five different components related to one of the 14 grand challenges prior to graduation.

- **Research experience**—project or independent research related to one of the 14 grand challenges.
- **Interdisciplinary curriculum**—preparing engineering students to work at the overlap with public policy, business, law, ethics, and human behavior, as well as medicine and the sciences.
- **Entrepreneurship**—preparing students to translate invention to innovation and to develop market ventures that scale to global solutions in the public interest.
- **Global dimension**—developing students' global perspective necessary to address challenges that are inherently global as well as to lead innovation in a global economy.
- **Service learning**—developing and deepening students' social consciousness and their motivation to bring their technical expertise to bear on societal problems.

The University of Iowa’s Engineering Grand Challenge Scholars Program was the seventh in the United States and the first in the Big Ten to be approved by the national committee. More details about the program and requirements can be found on the College of Engineering Grand Challenges Scholars Program web page.