ABET Engineering Criteria

ABET is the body responsible for accrediting all undergraduate Engineering, Engineering Technology, Applied Science and Computer Science Programs in the US. The Engineering Accreditation Commission (EAC) reviews all engineering programs at the University of Kentucky and elsewhere. Furthermore, to be a licensed professional engineer in the state of Kentucky, and many other states, requires that you have an ABET/EAC accredited degree.

The current Engineering Criteria (EC) is a monumental change in the ABET accreditation process and operational philosophy. In designing this criteria, ABET has striven to keep the criteria flexible in order to accommodate new forms of endeavor that use an engineering education or derivative of allied science or practices as a base. Thus, the philosophy of the change is to allow greater flexibility in the development of engineering programs and in the accreditation process as well as to emphasize Continuous Quality Improvement (CQI) in the educational missions of colleges and universities. This change in philosophy has become necessary since the educational system is faced with the challenge of training young adults to be ultimately able to resolve ever increasing educational demands. Consistent with this new philosophy, the Civil Engineering program has established the following broad goals:

1. Set educational objectives consistent with ABET/EAC criteria and with the College of Engineering's mission and goals using input from students, faculty, alumni, and employers.
2. Develop a process for ongoing evaluation and review of the objectives.
3. Ensure that the program curriculum and processes achieve education objectives.

Vision and Mission Statements

All activities conducted by the Civil Engineering Department are designed to fulfill its Vision and Mission statements. These statements are listed below:

Vision Statements

- To be recognized both nationally and internationally for excellence in Civil Engineering.
- To be of service to citizens of the Commonwealth.
- To be the preferred choice of:
    - Students seeking Civil Engineering education;
    - Companies hiring Civil Engineering graduates; and
    - Organizations seeking Civil Engineering knowledge.

Mission Statements

- To provide education, research, and service in a scholarly environment.
- To prepare CE students for successful professional careers.
- To meet the needs of the other constituencies.
- To extend the body of knowledge.
- To improve the quality of life.

Program Educational Outcomes

Consistent with the Vision and Mission statements, the Civil Engineering program at the University of Kentucky strives to meet the following specific educational objectives:

- Advise our students in their pursuit of academic success and monitor their progress,
- Prepare our graduates for successful civil engineering careers, and
- Provide our graduates with a broad education as a foundation for professional licensure and life-long learning.

A major educational change in Engineering Criteria is that it focuses on outcomes rather than simply on input. As part of the preparation process, the Civil Engineering Department Faculty, students, and industry advisory board have adopted the Engineering Criteria outcomes and have defined specific outcomes to be achieved by the civil engineering students at the University of Kentucky. These outcomes are:

(a) An ability to apply knowledge of mathematics, science, and engineering.

1. Graduates can apply math, science, and engineering knowledge to civil engineering problems.

(b) Ability to design and conduct experiments, as well as to analyze and interpret data.

1. Graduates are able to set up and conduct engineering experiments.
2. Graduates are able to present experimental results through appropriate graphical display.
3. Graduates are able to select and apply appropriate statistical methods for basic data analysis.

(c) An ability to design a system, component, or process to meet desired needs.

1. Graduates have design competence.

(d) An ability to function on multi-disciplinary teams.

1. Graduates are able to articulate teamwork principles.
2. Graduates are able to work with a multi-disciplinary team.

(e) An ability to identify, formulate, and solve engineering problems.

1. Graduates are able to solve defined and open-ended engineering problems.

(f) An understanding of professional and ethical responsibility.

1. Graduates understand the principles of ethical decision making and can interpret the ASCE Code of Ethics.
2. Graduates will understand the proper use of the work of others (e.g., plagiarism, copyrights, and patents).
3. Graduates will understand the special duty they owe to protect the public's

health, safety and welfare by virtue of their professional status as engineers in society.

(g) An ability to communicate effectively.

1. Graduates are able to produce engineering reports using written, oral and graphic methods of communication.

(h) The broad education necessary to understand the impact of engineering solutions in a global and societal context.

1. Graduates have a background in social science and humanities that provides them with a foundation for understanding the impact of engineering solutions in a global and societal context.
2. CE courses will include information on how engineering solutions affect the quality of life and the physical environment.

(i) A recognition of the need for, and an ability to engage in life-long learning.

1. Graduates realize that a BSCE degree is the beginning of their professional education.
2. Students will be encouraged to be active members in professional societies.

(j) A knowledge of contemporary issues.

1. Students are aware of emerging technologies and current professional issues.

(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

1. Graduates are able to use computers to solve engineering problems and to evaluate solutions.
2. Students are aware of current techniques in civil engineering practice.

As students in the civil engineering program, you will be expected to demonstrate competence in these outcomes.

In addition, Civil Engineering programs must demonstrate that graduates have: proficiency in mathematics through differential equations; probability and statistics; calculus-based physics; and general chemistry; proficiency in a minimum of four (4) recognized major civil engineering areas; the ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas; the ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum; an understanding of professional practice issues such as: procurement of work; bidding versus quality based selection processes; how the design professionals and the construction professions interact to construct a project; the importance of professional licensure and continuing education; and/or other professional practice issues.