



COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

Student Learning Outcomes Assessment

For graduation, students must obtain a grade of “C” or better in all required courses including General Education Requirements, Mathematics & Sciences courses, Engineering Fundamentals courses and Professional Core courses. Students must obtain a 2.0 GPA in all Civil Engineering courses attempted.

The department maintains a flowchart listing all required program coursework. This flowchart and a program plan are reviewed with each student on a regular basis by the Undergraduate advisor. The students are required to meet with their advisor each semester before registration for classes. Failure to maintain satisfactory progress in the program will initiate a review process by the Department.

Civil engineering faculty and industry members of the Department Advisory Council evaluate students on content knowledge, communication skills, and critical thinking skills. Possible outcomes for a student who receives an unsatisfactory evaluation include repeating course, tutoring or additional coursework.

CONTENT KNOWLEDGE (Declarative Knowledge and Technical Skills):

Students will recognize and apply concepts, principles and theories in core Civil Engineering courses (structures; civil engineering materials; hydraulics; soil mechanics; transportation; and environmental engineering):

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|---|--|
| EGN 3311: Statics | CEG 3011C: Soil Mechanics |
| EGN 3331: Strength of Materials | CWR 3201C: Applied Hydraulics |
| CGN 3501C: Civil Engineering Materials | CES 3102C: Analysis of Structures |
| ENV 3001C: Environmental Science and Engineering | TTE 3004C: Introduction to Transportation Engineering |

The faculty evaluates the content knowledge by giving scores (1 through 5, with 5 as the highest) for each class in the Continuous Improvement Worksheet (CIW) at the end of the semester. A score less than 4.0 will result in an improvement strategy to be implemented in the following semester.

COMMUNICATION (Written Communication, Oral Communication, Team/ Collaborative communication)

Students will

- Describe the interrelatedness of contemporary issues in a global and society context with Civil Engineering solutions.
- Communicate effectively in writing.
- Convey technical material through oral presentations.
- Function effectively in multidisciplinary teams

for the following courses:

EGN 1002: Fundamentals of Engineering
CGN 4804C: Civil Engineering Design II

CGN 4803C: Civil Engineering Design I

Students are required to write technical reports to be evaluated by the faculty members teaching EGN 1002. Students in the design sequence, CGN 4803C and CGN 4804C, will present oral and written reports to the faculty and the industry members of the Department Advisory Council (DAC). Students receiving unsatisfactory evaluations by the faculty and DAC industry members will be required to restart the sequence in the following semester.

CRITICAL THINKING (Analytical Skills, Creative Skills, Practical Skills):

Students will

- Use modern engineering techniques, skills, and tools, including computer-based tools for analysis and design;
- Identify, formulate and solve novel civil engineering problems;
- Design and conduct scientific and engineering experiments including analysis and interpretation of data;
- Deliver engineering results that meet performance standards for cost, safety, and quality;
- Describe the ethical and professional responsibilities of the civil engineer;
- Make and defend ethical judgments in keeping with professional standards

All civil engineering courses contain a critical thinking component. The following courses have more in depth critical thinking components:

CWR 4202: Hydrologic Engineering
CEG 4012: Foundation Engineering
CES 4605: Structural Steel Design
TTE 4005: Transportation Planning & Logistics

CES 4702: Reinforced Concrete Design
ENV 4514: Water and Wastewater Treatment System
CGN 4803C: Civil Engineering Design I
CGN 4804C: Civil Engineering Design II

The critical thinking skills that students obtained from the above group of courses will be evaluated by the faculty members who teach the design sequence, CGN 4803C and CGN 4804C. Again, students receiving unsatisfactory evaluations will be required to restart the sequence in the following semester.

Approved 4-12-2012