

A background image of a campus scene with several palm trees in the foreground and a building in the background. The image is overlaid with a semi-transparent blue filter.

## COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

### Student Learning Outcomes Assessment

For graduation, students must obtain a grade of “C” or better in each calculus course, each physics course, and each Electrical Engineering core course, and students must obtain a 2.0 GPA in all Electrical Engineering courses attempted.

The department maintains a flowchart that lists all of the coursework required in the program which is reviewed with the 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 review by the Department.

For students participating in the Cooperative Education Program, industry supervisors will evaluate students on content knowledge, communication skills, and critical thinking skills. Possible outcomes for a student who receives an unsatisfactory evaluation include repeating an industrial placement or portion of the placement, tutoring, additional coursework, or removal from the Cooperative Education Program with no credit given.

**CONTENT KNOWLEDGE (Technical Skills, Research Skills): Students will formulate and analyze problems, and synthesize and develop appropriate solutions based on fundamental principles. Students will recognize and apply concepts, principles, and theories in mathematics (including differential, integral and vector calculus, differential equations, probability and random processes and matrix theory); Physics; and the core Electrical Engineering courses (circuits, electronics, electromagnetic fields and waves, control systems, communication systems, signal processing and linear systems) .**

In the required senior design sequence (EGN 4410C Engineering Design 1 and EGN 4411C Engineering Design 2) interdisciplinary teams of electrical and computer engineering students will design, build and demonstrate a workable project to be evaluated by a team of three faculty appointed by the chair. The performance of the project will require the team to research their project in the technical literature and for the possibility of patent applications. The faculty evaluates the students for their

technical knowledge and research skills using an evaluation instrument developed for this purpose. This is done for both courses in the design sequence. Students receiving an unsatisfactory evaluation in EGN 4410C will not be allowed to continue into EGN 4411C and will be required to restart the sequence in a following semester.

**COMMUNICATION (Written Communication, Oral Communication, Team/Collaborative Communication): Students will communicate effectively in writing, convey technical material through oral presentations and function effectively in multidisciplinary teams.**

In EGN 1002 Fundamentals of Engineering (freshman level), students are required to write reports, make oral presentations and function in teams to perform design projects which are evaluated by the faculty member in charge of the course. In the laboratory sequence (EEL 3118L Lab 1 and EEL 4119L Lab 2) students work in teams to perform experiments and prepare individual technical reports. In the core course EEL 3012 Electrical Engineering Practice students communicate verbally and in writing about contemporary issues in a global and society context with Electrical Engineering solutions and about engineering ethics issues. In the required senior design sequence (EGN 4410C Engineering Design 1 and EGN 4411C Engineering Design 2)) student teams will prepare a technical report documenting the performance of the design project. This project will be presented to a group of three supervising faculty and their class peers in an oral presentation. Evaluations of the written report and the oral presentation will be performed by the faculty. Each student on the design team will complete a Peer Evaluation Report evaluating the contribution of the other team members to the project using an evaluation instrument developed for this purpose.

**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 electrical 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 electrical engineer.
- Make and defend ethical judgments in keeping with professional standards.

Students' electronics design skills using computer-aided tools will be assessed in the lab courses (EEL 3118L Lab 1 and EEL 4119L Lab 2) and in the EEE 4361 Electronics 2 course. Both EEL 3118L and EEE 4361 serve as a pre-requisites to EEL 4119L. EEL 4119L is a co-requisite to the design course EGN 4410C.

In the required senior design sequence (EGN 4410C Engineering Design 1 and EGN 4411C Engineering Design 2) student teams will perform design projects which will

incorporate the above criteria. A team of three faculty will evaluate these Capstone Design Project reports and oral presentations to these criteria. In performing the evaluations, the faculty members use their professional judgment and an assessment instrument developed for this purpose to evaluate communication skills and critical thinking skills, with respect to both individual students and student teams. Students receiving an unsatisfactory evaluation in EGN 4410C Engineering Design 1 will not be allowed to continue into EGN 4411C Engineering Design 2 and will be required to restart the sequence in a following semester.

REFER TO FAU'S UNIVERSITY CATALOG FOR ADDITIONAL DEGREE REQUIREMENTS