

EGN 4670C Innovative Sensing and Actuation Technologies

ABET Course Syllabus

1. **Course number and name:** EGN 4670C Innovative Sensing and Actuation Technologies
2. **Credits and contact hours:** 3 credits / Two 80 minute lectures each week
3. **Instructor's or course coordinator's name:** Dr. Curet
4. **Text book, title, author, and year:** None. Readings and lecture notes made available on Canvas by the instructor.
5. **Specific course information:**
 - (a) Brief description of the content of the course (catalog description): The purpose of this course is to familiarize students with innovative technology in sensing and actuation, through a series of modules each comprising lectures, a seminar and a laboratory. The course will conclude with a short project on designing and completing an experiment using the technology presented through the entire course. The students will operate the sensor and actuators and learn of calibration procedures.
 - (b) Prerequisites: EGM 4045 Electro-Mechanical Devices or EOC4612C Intro to Electronics/Programming (with a grade of C or above).
 - (c) Indicate whether a required, elective, or selected elective course in the program: Elective
6. **Specific goals for the course:**
 - (a) Specific outcomes of instruction (course specific objective): The objective of the course is to provide students with an applied knowledge of sensing and actuation, with a strong focus on innovative sensor and actuation technology.
 - (b) Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course. The learning outcomes of the course (and related ABET Criterion 3) outcomes are:
 1. An ability to understand the fundamental aspects of actuation and sensing (1).
 2. An ability to understand sensor and actuator specifications (2).
 3. An ability to use sensors and actuators in the design of an experiment (1).
 4. Knowledge of the latest technology development in sensing and actuation (7).
7. **Brief list of topics to be covered:**
 - Biomimetic actuation in robotics
 - Soft actuation in robotics
 - Acoustic actuation and sensing
 - Bio-sensing and MEMs
 - High-speed optical sensing
 - Tissue engineering