

EOC 4612C Introduction to Electronics & Programming
ABET Course Syllabus

1. **Course number and name:** EOC 4612C Introduction to Electronics & Programming
2. **Credits and contact hours:** 3 credits / Two 80 minute lectures each week
3. **Instructor's or course coordinator's name:** Dr. P. An
4. **Text book, title, author, and year:** C.K. Alexander, M.N.O. Sadiku, Fundamentals of Electric Circuits, 4th edition, McGraw-Hill, 2007 (ISBN: 978-0-07-352955-4)
5. **Specific course information:**
 - (a) Brief description of the content of the course (catalog description): Introduction to basic electronics and programming by means of lectures, laboratory assignments and a term project. Laboratory assignments include simple switching and filtering circuits using transistors and op-amp, sensor and actuator interfaces, data communication and Arduino programming. The term project involves designing a marine vehicle that incorporates many components covered in class..
 - (b) Prerequisites: Intro to Programming in C – COP 2220, Circuits 1 – EEL 3111 (all with a grade of C or above)
 - (c) Co-requisites: OE Lab – EOC 3130L
 - (d) Indicate whether a required, elective, or selected elective course in the program: Required
6. **Specific goals for the course:**
 - (a) Specific outcomes of instruction (course specific objective): This course is designed to provide students with hands-on experiences in 1) designing simple electro-mechanical systems with basic electronics and software programming; and 2) developing simple electronics and software interfaces with simple sensors and actuators.
 - (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 design and implement simple analog passive and active filters. (a, c, e, k/1,2,6)
 2. An ability to work with DC motors. (a, c, e, k/1,2,6)
 3. An ability to work with analog and digital sensor interface. (a, c, e, k/1,2,6)
 4. An ability to interface with and develop simple software programs for Arduino micro-controllers. (c,k/1,2,6)
 5. An ability to design basic circuits using op-amps (a, c, e, k/1,2,6)
 6. An ability to communicate effectively in writing a report (g/3)
7. **Brief list of topics to be covered:**
 1. Basic analog RC filter circuits
 2. Basic op amp circuits
 3. Basic switching circuits for motor control
 4. Basic Arduino micro-controller functions and C programming
 5. Basic analog to digital conversion and analog sensor interface
 6. Basic interfaces with DC motors

7. Basic about acoustic pingers and receivers and their interfaces
8. Basic magnetic compass characterization