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| **1. Course title/number, number of credit hours** |
| EOC 4612C – Introduction to Electronics &  Programming |  3 credit hours |
| **2. Course prerequisites, corequisites, and where the course fits in the program of study** |
| **Prerequisites**: 1. Computer Applications for ME 1 – EML 2538
2. Circuits 1 – EEL 3111
3. OE Lab – EOC 3130L
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| **3. Course logistics** |
| *Term*: Fall 2016 (WF 9:30−10:50am)Boca Raton Campus (EW 162) |
| **4. Instructor contact information** |
| *Instructor’s name**Office address**Office Hours* *Contact telephone number**Email address* | Dr. AnRm 174, Building 36, Boca Raton CampusWF 1-3pm (or walk-ins)561−297−2792pan@fau.edu |
| **5. TA contact information** |
| *TA’s name**Office address**Office Hours* *Contact telephone number**Email address* |   |
| **6. Course description** |
| Introduction to basic micro-controllers, sensors and motors. Simple switching and filtering circuits using transistors and op-amp, data communication and micro-controller programming will be covered.  |
| **7. Course objectives/student learning outcomes/program outcomes** |
| *Course objectives* | This course is designed to provide students with hands-on experiences 1n 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 |
| *Student learning outcomes**& relationship to ABET a-k objectives* | 1. An ability to design and implement simple analog passive and active filters. (a, c, e, k)
2. An ability to work with servo and/or stepper motors. (a, c, e ,k)
3. An ability to work with analog and serial sensor interface. (a, e, k)
4. An ability to implement level shifters and motor driver circuits. (a, c, e, k)
5. An ability to develop simple software programs for Arduino micro-controllers. (k)
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| **8. Course evaluation method** |
| Labs – 30%, Quizzes – 20%, Exam #1 – 20%, Exam #2 – 20%, Final Examination – 10%If the overall grade on the last day of class is maintained at 70% or above, the final exam can be waived, and the overall grade will be recomputed proportionally. |
| **9. Course grading scale** |
| > 90.0 A86.7-90.0 A-83.3-86.7 B+80.0-83.3 B76.7-80.0 B-73.3-76.7 C+70.0-73.3 C66.7-70.0 C-63.3-66.7 D+60.0-63.3 D56.7-60.0 D-< 56.7 F |
| **10. Policy on makeup tests, late work, and incompletes** |
| *Makeup tests* are given only if there is solid evidence of a medical or otherwise serious emergency before the tests that prevented the student of participating in the exam. Makeup exams should be administered and proctored by department personnel unless there are other pre-approved arrangements***Late work* without verifiable justification will NOT be graded.***Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given. |
| **11. Special course requirements** |
| N/A |
| **12. Classroom etiquette policy** |
| University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones, are to be turned off in class sessions. |
| **13. Disability policy statement** |
| In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS)—in Boca Raton, SU 133 (561-297-3880); in Davie, LA 203 (954-236-1222); or in Jupiter, SR 110 (561-799-8585) —and follow all SAS procedures. |
| **14. Honor code policy** |
| Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at [www.fau.edu/regulations/chapter4/4.001\_Code\_of\_Academic\_Integrity.pdf](http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf) |
| **15. Required texts/reading** |
| Not required. Students are required to purchase an official Arduino basic kit and a GPS receiver (GP 20U7)<https://www.arduino.cc/en/Main/ArduinoBasicKit><https://www.sparkfun.com/products/13740>  |
| **16. Supplementary/recommended readings** |
| Online Textbooks:<http://faculty.weber.edu/snaik/EE2260/alexander_sadiku_fundamentals_of_electric_circuits_4thed.pdf> <http://www.ece.mtu.edu/faculty/ljbohman/onlinetext/elint200.pdf><http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/> |
| **17. Course topical outline, including dates for exams/quizzes, papers, completion of reading** |
| **Course Topics**:1. Basic analog RC filter circuits
2. Basic impedance matching circuits
3. Basic op amp circuits
4. Basic diode and transistor circuits
5. Basic circuit analysis using Micro-Cap circuit simulation
6. Basic Arduino micro-controller functions and C programming
7. Basic analog to digital conversion
8. Data communication and parsing
9. Basic analog to digital conversion and analog sensor interface
10. Basic interfaces with DC motors

**Tentative Lab Topics**

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| **Lab 1** (Basic Resistor Circuits) |
| **Lab 2** (Micro-Cap Simulation) |
| **Lab 3** (RC circuits) |
| **Lab 4** (Impedance matching circuits) |
| **Lab 5** (Op-amp circuits) |
| **Lab 6** (Arduino digital I/O) |
| **Lab 7** (Arduino ADC and analog sensor interface) |
| **Lab 8** (Switching transistor circuits) |
| **Lab 9** (Controlling a DC Servo Motor) |
| **Lab 10** (Encoder reading using interrupts) |
| **Lab 11** (GPS Data Processing) |

**NOTE:** Each student is assumed to have a laptop for all the lab work. A write up is required for each of the labs.**Quizzes and Exam Dates**Only on Fridays (about 10-15 minutes each). Tentatively, there are 6 quizzes throughout the semester. **The last day to drop the course without receiving an F in the course: Nov 18, 2016**Exam #1 Oct 14 2016Exam #2 Dec 2 2016Final Exam Dec 14, 2016 7:45-10:15am |