ENME 351 – Electronics & Instrumentation II: Fall 2017 Syllabus
Department of Mechanical Engineering

**Lecture Details**
Monday & Wednesday, 10:00 am to 10:50 am
Glenn L. Martin Hall, Room 1202

**Lab Details**
All labs held in Glenn L. Martin Hall, Room 3108
- 0101 Tuesday 1:00 pm to 2:50 pm
- 0102 Wednesday 6:00 pm to 7:50 pm
- 0103 Wednesday 1:00 pm to 2:50 pm
- 0104 Tuesday 6:00 pm to 7:50 pm

**Instructor**
Name: Steven E. Mitchell, Ph.D.
Office: EGR 2128
Email: mitchels@umd.edu and via Canvas
Preferred Means of Contact: Piazza
Google Hangouts: mitchels.umd@gmail.com

**Lab Instructor**
Dr. Prakruthi Hareesh
Email: phareesh@umd.edu

**Course Description**
This is a required, 3-credit course focused on mechatronics. Full course details, including course objectives, can be found on the departmental website: [http://www.enme.umd.edu/undergrad/courses/enes351](http://www.enme.umd.edu/undergrad/courses/enes351).

The course includes two 50-minute lectures and one 110-minute lab per week.

The material covers a range of topics essential to the design of engineering products that combine mechanics, electronics, and computational/command-and-control software. Topics covered include: digital logic, microcontrollers and their peripherals (ADC's, DAC's, etc.), programming, sensing, signal conditioning (Fourier transforms, noise, filters), and actuation.

**Textbook**
Unfortunately, there exists no single textbook that comprehensively covers the material included in this course. The following textbooks are helpful and encouraged, but they are *completely optional*:


Grading Policy
Course grades will be based on the following approximate grade weights and breakdowns:

- Homework & Exercises: 10% (lowest 2 grades are dropped)
- Quizzes: 10% (lowest 5 grades are dropped)
- Labs: 40%
- Midterm Exam: 15%
- Final Exam: 25%

It is your responsibility to confirm the proper grades are recorded online for all graded work. You have one week from the date graded work is returned to dispute a grade.

Exams
One 50-minute midterm exam and one 2-hour final exam will be administered in this course. Successful completion of exams and assignments requires the use of calculators and, possibly, additional supplemental handouts. Calculators and additional required material may not be shared during examinations. No collaboration is permitted during examinations, and if violated, is subject to UMCP’s Academic Integrity policy.

Homework Assignments
i) The assignment questions will be posted online via Canvas and Gradescope.

ii) Homework assignments will be submitted and graded using Gradescope. You are encouraged to seek assistance from any legitimate source in understanding homework, including collaboration with other students. The written work, however, must be your own. No late submissions will be accepted.

iii) All work must be neat, legible, and contain the following at the top of the first page: printed name, student number, signature, assignment number, and due date. Your signature is your acknowledgment that you have understood and complied with the requirements of this policy statement and that you have acted honorably in the preparation of submitted work.

iv) For computer work, sufficient documentation must be provided to validate and reproduce the results. Typical documentation includes MATLAB/Arduino/Processing script files, input and parameter data, and results. Source code and scripts should include your name and brief descriptive text (i.e. comments). Plots must contain descriptive titles and appropriate labels.
Absences/Makeups: Class attendance is a prerequisite to success. **It is your responsibility to turn in any course work when due** and to obtain notes and announcements from another class member for classes you have missed. No late submissions will be accepted. If there are extenuating circumstances, discuss with the professor **prior to the due date** and alternate arrangements may be made. Unless a student can present advanced notice that an absence will be caused by serious illness, a death in the immediate family, religious observance, or participation in University activities at the request of University authorities, **no makeup exams will be offered.**

Collaboration Policy

Collaboration of any kind or the use of references and other sources of external information on exams is forbidden unless otherwise stated in this policy or as indicated in writing on assignment cover sheets. Selective collaboration on learning assignments (homework and in-class exercises) can often assist in the learning process. This should be done in moderation, however, since the ultimate measure of this course (and your final grade) is the level of the individual’s knowledge, not the collective knowledge of all of his/her associates.

Laboratory Policy

Labs will typically be completed individually, on your own time, almost every week. The laboratory assignments supplement the lectures and are an integral part of the course, providing you with hands-on experience.

The labs will primarily be based on the Arduino, an electronics prototyping platform; for further information see http://www.arduino.cc. Students must purchase their own Arduino and parts kit at the start of the semester; instructions are posted on Canvas. Students will need a personal computer to complete the labs, which will be due during your scheduled lab session. It will be most convenient if that PC is a laptop.

Lab sessions will be held in Room 3108 of Martin Hall. Students must complete the laboratory assignments to obtain a passing grade for the course. Please note the following.

- You must attend your assigned lab session. Students may switch to another section if space is available and only with a university-approved excuse. **Contact Dr. Prakruthi Hareesh (phareesh@umd.edu) if you need to re-schedule a lab session!**
- Specific instructions for each lab will be posted on Canvas. A tentative version of the entire lab manual is posted if you want to look ahead.
- The instructor, TA, or TF will check off during lab that you have successfully completed the required components.
- Pre-lab assignments must be completed **prior** to your lab section. If you have not made a sufficient effort, you will be asked to leave and make up the lab with a 30% penalty the following week.
- Grades for late lab makeups without a documented, approved excuse will be reduced by 30% the first week and 50% anytime through the final week of the course.
Office Hours Policy
If you have questions about the lectures, labs, or clarification on homework, office hours are an excellent opportunity to get help. This time may also be used if you have questions about how you might explore this material in greater depth. Remember: we want you to do well! However, office hours are not a substitute for lecture and the course staff will definitely not solve your homework for you.

The instructor, TAs, and TFs will keep office hours. You may contact them through Canvas or email to set up an appointment outside of regular office hours if you are not able to make these office hours.

Academic Integrity
By enrolling in this course, each student assumes full responsibility as a participant in UMCP’s scholarly community in which everyone’s academic work and behavior are held to the highest standards of honesty. You will be cheating if you turn in anyone’s work (homework, exam answers, schematics, figures, etc.) but your own. Students caught cheating will receive a zero on the assignment and will immediately be referred to the Office of Student Conduct. Facilitating cheating is the same thing. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.

ABET Program Criteria
In addition to teaching the subject material, accreditation of the Department of Mechanical Engineering at UMCP by ABET requires the curriculum to meet certain criteria. This course is designed to provide the students with the following ABET originated concepts:

a) An ability to apply knowledge of mathematics, science, and engineering.
b) An ability to design a system, component, or process to meet desired needs within realistic constraints.
i) A recognition of the need for, and an ability to engage in life-long learning
k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Syllabus Note
This course syllabus is subject to change. The most recent version is available on the course Canvas website. Please check regularly for updates.