

ME430 Mechatronic Systems

This class covers topics at the interface between computer science, electrical engineering, and mechanical engineering.

Instructors:

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Prerequisites: ME323 Computer Applications II or equivalent, ECE 207 Electrical Engineering or equivalent. Although formally ME323 Computer Applications II is a prerequisite, we have waived that prerequisite for some of you.

Web Page:

<http://www.rose-hulman.edu/ME430>

Textbook: There is no textbook for the course. You will find most of the important reference materials for the class linked to the web page.

Grading:

Quizzes	10%
Laboratory Work.....	15%
Project and Report	25%
Exam 1	15%
Exam 2	15%
Final Exam	20%

Note that you must have a passing (weighted) exam average to pass the class, i.e.

$$((\text{Exam1}) * 15 + (\text{Exam2}) * 15 + (\text{Final Exam}) * 20) / 50 > 60$$

Video Lectures/Quizzes: Almost every day, you will watch a video lecture *before* you come to class. Then when you arrive in class you will take an open-note, “open colleague” quiz on the video lecture. You will want to take very good notes on these videos, and those notes and the work you do in lab will constitute your main reference materials. Take good notes and stay organized!

Laboratory Work: The labs are a very big part of the learning experience in this course, and we will spend the bulk of our 6 hours a week on the labs. Nevertheless, you will often need to work outside of class to complete the labs on time. Your Rose-Hulman ID will unlock the door to the lab after hours.

You must complete **all** the labs in this class to receive a passing grade.

You will have a partner for the labs (and for the project). For each lab there is a handout that describes what you need to accomplish. As you complete each section, you will get “checked off” by your instructor. If you complete the lab (have it all checked off) on time, you will receive 100% on the lab. For each day the lab is late, we take 10% off of your grade. You must complete Lab 1 before you are allowed to begin Lab 2, and so forth.

Lab kits: You will need to purchase a \$20 lab kit next time we meet. (Please bring \$20 cash.)

Project and Report: The project is a big part of the individual learning in this course, and is 25% of your overall grade. You will have a partner (the same partner as for the labs). In the project you will sense something from the environment, make control choices based on these inputs using a microcontroller, and use the microcontroller to drive some physical outputs. The design/build/test/demonstration of the hardware and software is 85% of your grade, and the “report” is 15% of the project grade.

Project supplies: ***YOU ARE NOT ALLOWED TO PURCHASE MATERIALS FROM THE EE SUPPLY ROOM!*** There is a “shopping” area in the C112 workroom. You may take whatever parts you need from the shopping area, and at the conclusion of the course you are encouraged to put new or slightly used parts back into the shopping bins. Other than that, you need to purchase the supplies for your project. The only things you can buy from Rose (from your instructors) are duplicates of things you bought for your lab kit. Other than that, you are responsible for purchasing *all* supplies for your project from outside vendors.

Exams: Exam 1 is a one hour night exam, taken on paper and on the computer. Exam 2 is a 75 minute night exam, and uses the microcontroller boards. We only have one microcontroller board per team, so half of you will take the exam in the first 75 minutes and the other half will take it in the second 75 minutes.

Final Exam: The final exam is given during the usual 4 hour time slot at the end of the quarter. It is taken on paper and on the computer.