

# COURSE SYLLABUS

INSTRUCTOR: LEAH M. AKINS  
COURSE: ELECTRO-MECHANICAL DEVICES – ELT 213

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## THE NUMBERS

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OFFICE LOCATION	TACONIC 108 (NEAR 1 <sup>ST</sup> FLOOR EXIT)
VOICE MAIL	845-431-8421
ON-CAMPUS	EXTENSION 8421
E-MAIL	<a href="mailto:AKINS@SUNYDUTCHESS.EDU">AKINS@SUNYDUTCHESS.EDU</a>
WEB SITE	<a href="http://www.sunydutchess.edu/tlc/akins">www.sunydutchess.edu/tlc/akins</a>
OFFICE HOURS	As posted at office and on web site
EMERGENCIES – ONLY BEFORE 9pm	945-795-2016

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## COURSE DESCRIPTION

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The course is a study of basic sensors and transducers, measurement theory, DC and stepper motors, hydraulic and pneumatic components, mechanical linkages, gears and pulleys, and an introduction to electro-mechanical systems. The objective of this course is to study the electro-mechanical devices found in a wide variety of industry applications and specifically their use in robotics. Students work in a hands-on environment with a variety of lab kits for gears, pneumatics, hydraulics, and robotics.

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## REQUIRED TEXTS

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Electronics Motor Control Systems, Patrick and Fardo, Goodheart-Wilcox, latest edition.

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## STUDENT ASSESSMENT

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The following percentages will be used to calculate the final grade:

FINAL EXAM	15%
TESTS/QUIZZES	40%
LAB/CLASS ACTIVITIES	40%
PROJECT	5%

There are many activities that require class and group participation, especially lab and classroom activities, therefore attendance is expected. Students who have missed class assignments which require active class participation will need to make arrangements to make up for that assignment or the student will receive a zero grade for it.

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### **SOME MORE IMPORTANT INFORMATION**

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Please read the following carefully. It contains important information on the instructor's expectations of you in order to succeed in the course.

**TESTS/QUIZZES:** There will be six quizzes given during the semester (approximately every other week). Your lowest quiz grade will be dropped (a missed quiz is automatically a grade of zero, there are no makeup quizzes). All quizzes are individual efforts. Each student is allowed to prepare a reference sheet on a single sheet of 8 ½" X 11" paper that they can use during the quiz. Since the purpose is to BE PREPARED, students will not be allowed to copy sheets prior to the quiz nor are students allowed to share a reference sheet during a quiz. Each quiz will test your competency and understanding of the most recent material. This will likely include problems similar to those given as homework, therefore it is VERY important to have worked the problems and come to class prepared with questions. Quizzes may also include questions based on the most recent reading assignments and topics covered in lecture or lab.

**LAB/CLASS ACTIVITIES:** Lab work will involve a wide variety of activities. You will be assessing each other on your preparedness and participation. You will be wiring and testing circuits, performing activities with mechanical and pneumatic components, constructing robots, and reporting on results. You will be assessing each other on your preparedness and participation (see related handouts). You will be asked to submit materials electronically. For most of these activities, **GROUPS WILL BE SELECTED AT RANDOM AND GROUP SIZES WILL VARY DEPENDING ON THE TASK.**

**PROJECT:** A robotics project will be assigned in the course. Work on the project will take place during the last few weeks of the course. The project grade will include either a written or an oral report. An informational sheet will be distributed concerning the project as the need arises.

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### **COURSE TOPICS**

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Topic 1 – Introduction to Robotics (1 week) Chapter 22

Topic 2 – Background Information (2 weeks) Chapters 2 and 5

Topic 3 – Electro-Mechanical Components ( 4 weeks) Chapters 22, 9, 10, 12

Topic 4 – Control Systems (4 weeks) Chapters 13, 16, 18

Topic 5 – Controllers (3 weeks) Chapters 17, 19, 21