DEPARTMENT OF OCEAN AND MECHANICAL ENGINEERING

Common Course Syllabus

EGM 4045 – ELECTRO-MECHANICAL DEVICES - 3 CREDITS

Prerequisites:

1. Engineering Mathematics I – MAP 3305 or

Differential Equations I – MAP 2302

1. Physics for Engineers II – PHY 2044

Corequisites:

1. EGN 3343 Engineering Thermodynamics or equivalent

Course Logistics:

Term – Spring 2014

Class – MWF 9:00-9:50AM

Instructor Contact Information:

Name: Dr. Amir Abtahi

Office Address: Engineering West (EG-36), Room 109

Office Hours: M-W 11:00AM-2:00PM,

Telephone Number: (561)297-3425

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Course Description:

Principles of electrical circuits, DC and AC devices, electrical machines and sizing of electrical systems for mechanical loads. Design of circuits and filters for data acquisition. Introduction to applied electrical specification of motors and NEC codes.

Course Objectives:

This course is designed to introduce the students to concepts: 1) RLC networks and their response to step and sinusoidal inputs; 2) Selection and control of appropriate electric drive, DC or AC, for particular applications; 3) Use of basic components for signal conditioning, amplification and filtering.

Student Learning Outcomes: (letters in parentheses indicate correlation of the outcome with the appropriate program assessment outcomes a-k)

1. The student will be able to solve simple RLC networks. (a,e,k)
2. Students will have a basic understanding of AC and DC motors. (a,c,e,k)
3. Students will be able to incorporate microprocessors to process a task. (a,e,k)
4. The student will be able to understand some applications of RC and RL networks. (a,c,e,k)
5. Students will understand the basics of single phase and three phase networks (a,e,k)

Course Evaluation Method:

Attendance and Laboratory work– 15%

Tests – 30%

Project – 40%

Final Examination – 15%

The minimum grade to pass the course is C.

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 and laptops, are to be disabled in class sessions.

Disability Policy Statement:

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures.

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).

Textbook:

There is no textbook required for this course. Instructor notes and problem sets will be provided through Blackboard.

Course Topics:

1. Characteristic of resistance, inductance and capacitance components (3 classes).
2. Serial and parallel connections of components (3 classes)
3. Analysis of networks using Ohm’s and Kirchhoff’s laws (5 classes)
4. Programming Microprocessors with review of C and C++ (4 classes and lab sessions)
5. AC and DC motors, speed versus torque characteristic of motors (2 classes)
6. Characteristics of electronic components: transistors, diodes, OP amps etc (8 classes)
7. Project proposals and project discussions (24 classes)

Test Dates:

1. Test 1, Monday Februray 10, 2014

2. Test 2, Friday March 15, 2014

3. Project Presentations: Wednesday April 23, 2013

4. Final-Friday April 25. 2014