EML 4501  
MECHANICAL DESIGN II  
Section: U01  
Spring 2016  

Faculty: Dr. Sabri Tosunoglu  
E-mail: tosun@fiu.edu  

EC 3435 Robotics & Automation Lab  
Florida International University  
Department of Mechanical Engineering  
10555 West Flagler Street  
Miami, Florida 33174  

www.eng.fiu.edu/mme/robotics  

Catalog Description:  

Prerequisite:  
EML 3500 Mechanical Design I.  

Lectures:  
TR 5:00– 6:15 pm, EC 1112.  

Office Hours:  
R 2:00-3:00 pm. For other times, by appointment via e-mail.  

Text Book:  

Must have access to McGraw-Hill Connect site for online assignments.
Course Objectives:

1. This course presents a review of mechanical elements such as gears, ball and journal bearings, belts, brakes, and so on.


4. Open-ended design project to integrate various components.

ABET MME Program Outcomes Supported by the Course:

(a) an ability to apply knowledge of mathematics, science, and engineering

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multidisciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Note regarding ABET MME Objectives and Outcomes:

ABET program objectives and outcomes are defined for the MME program that must be achieved by graduating students.

Each course supports several of the objectives and outcomes incrementally but must not necessarily achieve them fully.
Course Outline:

1. Introduction to Gears 13
2. Spur and Helical Gears 14
3. Bevel and Worm Gears 15
4. Rolling Contact Bearings 11
5. Journal Bearings 12
6. Clutches, Brakes, Couplings and Flywheels 16
7. Flexible Elements: Belts and Chains 17

Grading Policy:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 1 (Chapters 13, 14 and 15)</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 2 (Chapters 11 and 12)</td>
<td>15%</td>
</tr>
<tr>
<td>Project 1 (Team project with video presentation)</td>
<td>10%</td>
</tr>
<tr>
<td>Project 2 (Team project with open-ended design)</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam (Comprehensive: All material included)</td>
<td>25%</td>
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Exam and Quiz Policy:

- During the exams and quizzes, a personal calculator may be used. See the calculator policy below.

- Laptops, tablets, cell phones, mp3 players or any electronic device will not be allowed.

- Lecture notes, PowerPoint files and problem solutions will not be allowed.

- No material or calculator may be shared by students.

- Individually-prepared one letter-size sheet of formulas will allowed in each midterm exam, and three sheets in the final exam.
Calculator Policy:

Only the following calculators will be allowed during exams and quizzes:

- Casio: All fx-115 models. Any Casio calculator must contain fx-115 in its model name.
- Hewlett Packard: HP 33s and HP 35s models, but no others.
- Texas Instruments: All TI-30X and TI-36X models. Any Texas Instruments calculator must contain either TI-30X or TI-36X in its model name.

Students can use only their own calculator. No calculator can be shared by students.

Unannounced Quizzes:

Unannounced quizzes will be frequently given throughout the semester. On average, expect one quiz per week although on several occasions, more quizzes per week may be given. Under no circumstances make-up quizzes will be offered. In case you miss a class, be prepared to receive a grade of zero for the quiz. No excuse will be accepted for missing quizzes. At the end of the semester, the lowest quiz grade will be dropped.

Bonus Quiz Grade:

By joining the social media presence of the Department of Mechanical and Materials Engineering, students associate themselves with the professional world, which enhance their profiles, and offer new opportunities to them.

Hence, students that join or like the following MME social media outlets will receive a full quiz grade which will replace the lowest quiz grade:

- https://www.linkedin.com/in/sabritosunoglu
- https://www.facebook.com/sabri.tosunoglu
- https://www.facebook.com/fiumme
- https://instagram.com/fiumme
- https://www.linkedin.com/grp/home?gid=8392213
- https://twitter.com/fiumecheng

Make-up Exams:

Make-up exams will be allowed only after the student provides a medical doctor’s original report describing the problem and a statement that it was an emergency. The report must include the doctor’s address and phone number. The Department will contact and verify the situation before a test day is scheduled.
Project Due Dates:

Project due dates will vary between one to several weeks depending on the amount of work required. However, the due dates will be announced in class as the projects are distributed. Exam dates will be announced at least one week earlier than the exam date. It is the student’s responsibility to follow announcements closely.

Late Projects:

Project due dates will be strictly enforced. Late project submissions will not receive full credit, and the following policy will apply: Submissions after the class hour on due date or the following day will lose 10 points out of 100. Submissions on the second or third day after the due date will lose 10 additional points each day.

Correspondence via E-mail:

Each student is required to provide a reliable e-mail address for correspondence. Various announcements and reminders will be sent via e-mail throughout the semester.

Students are expected to check their e-mail regularly and make sure their inboxes are not full as the bounced mail messages will not be sent again.

Attendance:

Attendance will be monitored throughout the semester.

Policy on Incomplete Grades:

A grade of “incomplete” will not be assigned to replace an unwanted grade. In order to be eligible to receive “incomplete,” only a single component of the entire coursework needs to be missing. The reason for failure to fulfill the requirement in time must be officially proved by the student (e.g., a medical doctor’s official letter), and verified by the Department in order to receive an “incomplete” grade.

The University requires that a student must fill out an “Incomplete Grade Form” before the incomplete grade is assigned. The form will be signed by the student and the professor before such grade is assigned.

Ethics:

All work prepared and submitted in this course in the form of projects, presentations, problem solutions in quizzes and exams are expected to be original and produced by the submitting student.

Any portion that may have been borrowed from a previous work must be clearly identified and referenced to indicate the original author along with the title of the work, and where and when it appeared. It is extremely important to realize that not doing so may result in an accusation of plagiarism.
Projects must contain the following statement and include student’s signature:

**Ethics Statement:**

The work submitted in this project is solely prepared by TEAM MEMBER 1, TEAM MEMBER 2, TEAM MEMBER 3, and it is original. Excerpts from others’ work have been clearly identified and listed in the list of references. All of the engineering drawings, computer programs, formulations and related files submitted on the accompanying CD and documented on paper are also original and prepared by the team.

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<tr>
<th>Signature1</th>
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<tbody>
<tr>
<td>Team Member 1</td>
<td>Team Member 2</td>
<td>Team Member 3</td>
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**Academic Misconduct:**

Academic dishonesty is a serious offense and will be treated according to the University policy as outlined below.

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, rigorous and respectful exchange of ideas, and community service.

All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University.

All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.