EML 4501
MECHANICAL DESIGN II
Section: U02
Fall 2014
Instructor: 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:
M 12:00 noon – 12:50 pm, EC 1115.
WF 12:00 noon – 12:50 pm, EC 1112.

Office Hours:
W 1:00-2:00 pm. For other times, by appointment via e-mail.

Text Book:
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) Ability to apply knowledge of mathematics including statistics, multivariable calculus and differential equations, science including physics, and engineering

(c) Ability to design a system, component, or process to meet desired needs.

(d) Ability to function on multi-disciplinary teams.

(e) Ability to identify, formulate, and solve engineering problems.

(f) Understanding of professional and ethical responsibility.

(g) Ability to communicate effectively.

(i) Recognition of the need for, and ability to engage in life-long learning.

(j) Knowledge of contemporary issues.

(k) 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:            Chapter

1. Introduction to Gears       13
2. Spur Gears                   14
3. Helical Gears               14
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>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 1 (Chapters 13 and 14)</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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</tbody>
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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, computers, 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:**
LinkedIn provides a basis for professional networking and many of our students have gained new professional contacts via the LinkedIn account. Hence, our presence in this professional community improves our department’s profile and allows new opportunities to our students.

Students who create an account at LinkedIn and connect their account with Dr. Tosunoglu (tosun@fiu.edu) will receive a full quiz grade which will be considered as an extra quiz.

**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.

**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:

<table>
<thead>
<tr>
<th>Author’s Statement:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The work submitted in this project is solely prepared by NAME1 LASTNAME1, NAME2 LASTNAME2, etc. and it is original. Excerpts from others’ work have been clearly identified and listed in the list of references.</td>
</tr>
<tr>
<td>All of the engineering drawings, computer programs, formulations and related files submitted on the accompanying CD are also original and prepared by NAME1 LASTNAME1, NAME2 LASTNAME2, and NAME3 LASTNAME3.</td>
</tr>
<tr>
<td>NAME1 LASTNAME1</td>
</tr>
<tr>
<td>(Include Signature)</td>
</tr>
</tbody>
</table>

**Plagiarism Prevention at Turnitin.com**
Final versions of Project 1 and 2 reports will be submitted to [www.turnitin.com](http://www.turnitin.com) to be evaluated against plagiarism.

The site compares the submitted document for similarities against the works published by others and assigns a similarity index. Lower similarity percentages (0 to 10%) indicate
less similarity and are interpreted as good. Higher percentages mean that plagiarism is likely and your report grade will be adversely affected.

Each team is required to upload their reports by one team member since multiple entries of the same report result in very bad similarity indices for later submissions. In order to improve the similarity index, the same team member will be permitted to resubmit the revised report before the deadline expires.

You can submit your reports to www.turnitin.com by using the following information:

Course ID: 2925397
Password: MechDesign2

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.

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.