

<b>MENG375 – Machine Elements-I</b>				
<b>Eastern Mediterranean University</b>				
<b>Faculty of Engineering</b>				
<b>Department:</b> Mechanical Engineering				
<b>Program Code:</b> 23	<b>Program:</b> Mechanical Engineering	<b>Year/Semester:</b> 2020-2021 FALL		
<b>Course Code:</b> MENG375	<b>Course Title:</b> Machine Elements -I	<b>Credit hours</b>		
		<b>Lec.</b>	<b>Tut/Lab</b>	<b>Total</b>
		<b>3</b>	<b>1</b>	<b>3</b>
<b>Categorization of Course:</b> <input checked="" type="checkbox"/> Engineering or Area Core <input type="checkbox"/> Engineering Course offered by other programs <input type="checkbox"/> Engineering Area Elective <input type="checkbox"/> Mathematics and Basic Sciences <input type="checkbox"/> General Education		<b>Categorization of Credits:</b> a. Mathematics & Basic Science: - b. <b>Engineering Topics:</b> <b>3</b> c. General Education: - d. Major Engineering Design: -		
<b>Instructor Name:</b> Assist. Prof. Dr. Babak Safaei		<b>Office no:</b> ME120	<b>Office Tel:</b> 6302381	
<b>Course Web Page:</b> <a href="https://staff.emu.edu.tr/babaksafaei/en">https://staff.emu.edu.tr/babaksafaei/en</a>				
<b>Textbook(s):</b> <ul style="list-style-type: none"> <li>• Robert L. Norton, Machine Design, An Integrated Approach, 5<sup>th</sup> Ed., Pearson</li> <li>• Richard G. Budynas, J. Keith Nisbett, Shigley’s Mechanical Engineering Design, 9<sup>th</sup> Ed., McGraw Hill</li> </ul>				
<b>Catalog Description:</b> The course covers fundamentals of machine design which include: general design rules, load analysis, materials selection, stress, strain and deflection analysis, failure theories, the concepts of reliability and safety, tolerances and fits; and introduces design guidelines.				
<b>Prerequisite(s)</b>	MENG222			
<b>Type of Course</b>	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Selected Elective <input type="checkbox"/> Elective			
<b>Student Outcomes</b>				
<b>1</b>	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	<input checked="" type="checkbox"/>		
<b>2</b>	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	<input type="checkbox"/>		
<b>3</b>	an ability to communicate effectively with a range of audiences	<input type="checkbox"/>		
<b>4</b>	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	<input type="checkbox"/>		
<b>5</b>	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	<input type="checkbox"/>		
<b>6</b>	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	<input checked="" type="checkbox"/>		
<b>7</b>	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>		

Course Learning Outcomes		Student Outcomes							Assessment Percentages
		1	2	3	4	5	6	7	
1	Understand strength, safety and reliability goals for designing specific machine components.	X							Midterm Exam: 20% Final Exam: 40% Project: 40%
2	Select suitable material for different mechanical parts and applications.	X							
3	Understand the importance of tolerances and fits in critical design applications.	X							
4	Understand life of a material under static and dynamic loading.	X							
5	Practice engineering software for analysis of stress-strain behavior of machine elements.	X					X		
6	Get familiar with codes and standards in relation to machine elements.							X	
<b>Weight of Student Outcomes</b>		<b>H</b>					<b>M</b>	<b>L</b>	

#### Topics Covered and Class Schedule:

<b>Week 1</b>	Introduction to Design
<b>Week 2</b>	Introduction to Design
<b>Week 3</b>	Materials and Processes
<b>Week 4</b>	Stress; Strain
<b>Week 5</b>	Stress; Strain
<b>Week 6</b>	Deflection; Torsion
<b>Week 7</b>	Deflection; Torsion
<b>Week 8</b>	<b>Midterm Examination</b>
<b>Week 9</b>	<b>Midterm Examination</b>
<b>Week 10</b>	Static Failure Theories
<b>Week 11</b>	Static Failure Theories
<b>Week 12</b>	Fatigue Failure Theories
<b>Week 13</b>	Fatigue Failure Theories
<b>Week 14</b>	Surface Failure
<b>Week 15</b>	Revision
<b>Week 16</b>	<b>Final Examination</b>

#### Lab./ Project Work

No.	Experiment Title and Equipment Used	CLO	SO	Percentage
1	<b>Title:</b> Analysis and Design of Machine Elements <b>Equipment:</b> ANSYS, Catia and Solid Work	5	1, 6	40 %

**Important Notes Regarding the Course:** University rules and regulations are applied to this course. For details, please see <http://mevzuat.emu.edu.tr>

### **Exam and Quiz Policy**

The midterm and final exams are OPEN book.

### **Makeups**

1. There is no make-up or reset for the Quiz and Labs.
2. A student who fails to sit for an examination for a valid reason is given a make-up exam. Within three working days after the examination, students who wish to take a make-up must submit a **written statement** to the course instructor explaining the reason(s) for his/her request.
3. Eligibility to take a **Make-Up Exam**:
  - a. Student must contact the Instructor immediately within “**three working days**” after the examination when (s)he has missed the mid-term exam or final exam and to discuss with the faculty about the date and time to take the make-up exam.
  - b. Student must secure a “**Make-Up Exam Form**” from the department Office or from instructor website & fill-out the Form. For each Make-Up Exam, please use separate Form.
  - c. Student must secure the approval from the instructor for taking the Make-Up Exam.
  - d. Failure to take the Make-Up Exam at the agreed date and time will lead to a “NG” Grade for the Make-Up Exam, midterm or final.

### **NG Policy**

1. “**NG**” Nil Grade/ **Failing from Absenteeism**: Students who do not comply with the required level attendance and/or not fulfilling the requirements for the evaluation of the course are given the “NG” grade by the Instructor of the Course based on the criteria determined by the Faculty/School Academic Council. Students are informed about the criteria for receiving the “NG” grade by the related course instructor at the beginning of the semester. “NG” grade is included in the computation of GPA and CGPA.
2. Student attendance is monitored and assessed by the course instructor. A student who fails to meet the requirements of a course or who is absent more than the limit specified by the Faculty is considered to be unsuccessful in that course.
3. Students who do not attend any of the above assessment activities (such as mid-term exam, final exam, lab exam, design project report etc.) will be given NG (Nil Grade).
4. Late Submissions of the Assignments, Lab Reports and Project will be graded as zero.

### **Important Notes**

Late submission of Homework or Project will not be accepted and evaluated.

### **Appeals**

Any appeal against the marks of any assessment component must be made to the course instructor within one week following the announcement of the marks. Any appeal concerning a semester grade must be made to the course instructor no later than the end of the registration period of the following semester.

**Prepared by:** Assistant Prof. Dr. Babak Safaei

Date Prepared: 21.10.2020