

MIDDLE EAST TECHNICAL UNIVERSITY NORTHERN CYPRUS CAMPUS

Syllabus for MECH-100 (0-2)1 Introduction to Mechanical Engineering
2024-2025 Academic Year 2nd Semester

Instructor:

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Course Schedule:

Assoc. Prof. Dr. Murat Sönmez 2024-25 Academic Year 2nd Semester							
SCHEDULE							
Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
08:40 - 09:30							
09:40 - 10:30							
10:40 - 11:30	Office Hour						
11:40 - 12:30	MECH 114 [I-104]				Office Hour		
12:40 - 13:30	MECH 114 [I-104]						
13:40 - 14:30							
14:40 - 15:30			Office Hour				
15:40 - 16:30	MECH 100 [I-104]		ASE 492 [I-104]	MFAK SÖNMEZ	ASE 492 [I-104]		
16:40 - 17:30	MECH 100 [I-104]		ASE 492 [I-104]	MFAK SÖNMEZ	ASE 492 [I-104]		
17:40 - 18:30	MECH 113 [I-104]		MECH 533 [I-104]	MECH 114 [I-104]	MECH 113 [I-104]		
18:40 - 19:30	MECH 113 [I-104]		MECH 533 [I-104]	MECH 114 [I-104]	MECH 113 [I-104]		
19:40 - 20:30			MECH 533 [I-104]				

Catalog Description

Overview of the major fields of mechanical engineering: design, production, theory of machines, solid mechanics, fluid mechanics and thermal and energy systems. Systems approach, project planning, engineering ethics. Team work and design process.

Reference Books and other Supplementary Materials:

* Wickert, J. "An Introduction to Mechanical Engineering", 4th Ed. 2017, Thomson

* Eide, A., Jenison, R., Northup, L., Mickelson, S., "Engineering Fundamentals and Problem Solving", 6th Ed. 2012, Mc. Graw Hill.

*Lecture Notes at the web page of MECH100

<http://users.metu.edu.tr/sonmez/MECH%20100/MECH%20100home.htm> and also in METU Class
<https://odtuclass.metu.edu.tr/>

Grading:

Mid-Term Exam : 30%

Pop-Quizzes/ Quizzes : 30%

CW (using Autodesk Fusion 360) : 5% Bonus

Final : 40%

Important Note for Attendance: 70% attendance is mandatory. If your attendance is below 70%, you will not be allowed to take the midterm and the final exams.

NOTE: Without taking the permission of the instructor, course materials; lecture notes, video records, worksheets, exam questions, and their solutions are not allowed to be shared

Course Objectives

The main objective of the course is to prepare the students to mechanical engineering profession at an early stage. The course aims to provide the students:

- A general understanding of major fields of mechanical engineering.
- Knowledge about mechanical engineering curriculum and the content of engineering courses
- Appreciation for engineering ethics.
- Awareness of social concerns in engineering practices.
- Knowledge about professional engineering organizations.
- Review on SI and Customary American Unit Systems, unit consistency, Basic units, Generated units
- How mechanical advantage and efficiency are defined and determined
- Basic principles of scientific computation and engineering solution. How the engineering calculations are output and represented.
- Introduction to Statics
- Introduction to manufacturing technology
- Introduction to dynamics
- Introduction to strength of materials
- Introduction to thermodynamics
- Introduction to fluid mechanics
- Introduction to heat transfer
- A preliminary step to engineering design in a team environment.
- Introduce CAD/ CAM using the tools of Autodesk Fusion 360

Teaching Format

One 50-minutes lecture, one 50 minutes classwork activity per week.

Weekly Class and Tutorial Schedule

Week 1	Introduction; mechanical engineering profession, mechanical engineering curriculum
Week 2	Business Etiquette, Morals, Ethics, Engineering Ethics, Research and Publication ethics committee of METU NCC
Week 3-4	Unit Systems, Unit Conversion, Dimensional Consistency. Corrections on some basic and derived concepts
Week 5-6	Estimation in engineering, Problem solving and communication skills, Presenting engineering calculations
Week 7-8	Principles of statics and dynamics; force, moment, torque, equilibrium of forces and moments, free-body diagram
Week 9	Overview on manufacturing and materials, common machine elements; fasteners, gears, pulley-belt mechanisms, chain-sprocket mechanisms
Week 10	Introduction to Mechanics of Materials
Week 11	Introduction to Fluid Mechanics
Week 12	Introduction to thermodynamics; energy, work, power, heating value, specific heat, transfer of heat, heat engine, thermal efficiency. Introduction to heat transfer
Week 13-14	Introduction to Autodesk Fusion 360; model creation, engineering calculations in Fusion, manufacturing tools of Fusion. Class-Work