

MKS 537E – Introduction to Computer Aided Engineering

Fall Semester 2021-22

(3+0) 3 credits (3 ECTS credits)

CRN 13512

Lecturer Prof.Dr. C. Erdem İMRAK,
Mech. Eng. Building (ITU) Room: 224 | Tel: 293 1300 – 2576 | e-mail: imrak@itu.edu.tr
Assistant Ar.Gör. Eren KALAY
Mech. Eng. Building (ITU) Room: 221 | Tel: 293 1300 – 2449 | e-mail: kalaye@itu.edu.tr

Office Hours Tuesdays 10³⁰-14³⁰; Thursdays 11³⁰-14³⁰; Fridays 11³⁰-14³⁰

Course Hours Fridays 14³⁰- 17³⁰ (Zoom online)

Prerequisite N/A

Web site <http://transport.itu.edu.tr/dersler/lisansustudersleri/mks537e>

Recommended [1] A. Tizzard, **An Introduction to Computer-Aided Engineering**, McGraw Hill Book, London, 1994

Texts [2] İ. Zeid, **Mastering CAD/CAM**, McGraw Hill Book, New York, 2004
[3] P.Radhakrishnan, S.Subramanyan, V.Raju, **CAD/CAM/CIM**, New Age Int. Publ., New Delhi, 2008
[4] G. Farin, **Curves and Surfaces for CAGD**, Morgan Kaufmann Publ., 2002
[5] S. Moaveni, **Finite Element Analysis**, Pearson, Boston, 2014
[6] M.K. Agoston, **Computer Graphics and Geometric Modeling**, Springer, New York, 2005
[7] M.P. Groover, **Automation, Production Systems & CIM**, Pearson, Boston, 2015

Course description In this course, engineering design and the design process; computer aided engineering hardware; computer aided draughting and design; geometric modelling for engineering applications; solid modelling techniques; numerical methods (FEM & BEM); computer aided project planning and control; system simulation; computer integrated manufacturing, and factory communications.

Objectives The objectives of this course are to teach the students;
1. providing with a foundation in computer aided design,
2. developing a critical awareness of numerical methods in engineering analysis,
3. making aware of the capabilities and limitations of computer design tools for engineers.

Learning Outcomes The student will demonstrate their ability to
1. give a critical view of a foundation in computer aided design,
2. give a critical view of solid modelling techniques,
3. discuss the scope and the purpose of numerical methods,
4. discuss the implementation and operation of CIM,
5. awareness of concurrent engineering.

Assessment This course is very time consuming. This is a 3-credit hours course, so expect to work at least 3 hours outside of class for every one hour in class. The student should spend at least 6 hours per week on the computer outside of class. To successfully progress through the course, students must understand each of the topics in the order it is presented. Students missing class are still responsible for the material covered in class. Students are expected to comply with all requirements for the class. Homework will be graded based on content and neatness. **Grades are not given, they are earned.** You are expected to accept all responsibility for your performance in the class.

Term Success Grade

Homeworks	30 %
Midterm exam	50 %
<u>Term Project</u>	<u>20 %</u>

Final Grade

Term success grade	60 %
Final Exam (Exam Week) ..	40 %

(VF) Nonattendance is the grade given to students who have failed to regularly attend courses or have not fulfilled the requirements of course practices. These requirements are:

ATTEND at least **70%** of the course.

FULFILL at least average grade of **50/100** in homework.

Evaluation and overall grading scale Final grade will be awarded as following. However, the instructor may adjust the scale according to the class performance.

Coordinator Prof.Dr. Hikmet Kocabaş
Date September 2021