MIDDLE EAST TECHNICAL UNIVERSITY
Department of Chemical Engineering
ChE 550 - Chemical Engineering Mathematics

Course Syllabus and Schedule for Fall 2016

Instructor

İsmail Tosun
Professor of Chemical Engineering
Office: D-Z06   Phone: 210 2637
itosun@metu.edu.tr

Assistant

Atalay Çalışan
Office: C-Z04   Phone: 210 4386 - 210 4361
calisan@metu.edu.tr

Course Objectives

• Bridge the gap between mathematics and application
• Aid in reading the scientific and engineering literature
• Review of mathematics
• Practice in formulation of problems
• Introduction to some new techniques in engineering

Classroom Hours

T 08.40-09.30 (Room: Z-121)   **Th** 10.40-12.30   (Room: Z-121)

Office Hours

Students are welcome (and encouraged) to come as needed. If I am in my office and not on the phone or with another person, I will make time for you. At minimum, we will arrange a time to meet that will accommodate both of our schedules.

Mr. Çalışan will be available on the following days and times:

Monday (10.00-12.00)   Wednesday (10.00-12.00).

Course Website

The course outline, homework assignments, and all handouts will be posted on **METU-Class** (*https://metuclass.metu.edu.tr*). For additional information you may also visit my webpage: *http://users.metu.edu.tr/itosun.*

Exam Dates

Midterm Exam # 1 : November 17, 2016
Midterm Exam # 2 : December 29, 2016
Final Exam   : To be arranged

Recommended Textbooks

Hildebrand, F.B., *Advanced Calculus for Applications, 2nd*. Ed*., Prentice Hall, 1976.

Jenson, V.G. and Jeffreys, G.V., *Mathematical Methods in Chemical Engineering*, Academic Press, 1977.

Margenau, H. and Murphy, G.M., *The Mathematics of Physics and Chemistry*, 2nd Ed., Krieger Publishing, 1976.

Mickley, H.S., Sherwood, T.K. and Reed, C.E., *Applied Mathematics in Chemical Engineering*, 2nd Ed*., McGraw-Hill, 1957.

Rice, R.G. and Do, D.D., *Applied Mathematics and Modeling for Chemical Engineers*, 2nd Ed., Wiley, 2012.

Tosun, I., *Modeling in Transport Phenomena*, 2nd Ed., Elsevier, 2007.

Policies and Procedures

All tests will be open-book (only one book) and open-notes. It is your responsibility to understand the exam questions. If you have difficulty with English, you may bring a dictionary with you.

If you miss an exam with a certified medical excuse, you may take a make-up exam at a designated time during the final exams (January 9 - 21, 2017). It will be comprehensive and **CHALLENGING**.

Attendance at every class meeting is strongly recommended. If you are one of those students with unexcused absences, do not expect me to spend time outside of the class to answer your questions related to the material covered during these absences.

As a mature and a responsible graduate student, you are expected to take charge of your learning. You should thoroughly read up the notes before the lecture.

In the solution of homework problems use A-4 size paper and one side of each page.

Late homework will be accepted up to one week after the due date and will receive a maximum grade of 60%. However, if you abuse this privilege by routinely handing in homework late, the privilege will be withdrawn.

To get an AA in this course, you must attempt and do satisfactory work on all homework problems in addition to getting the necessary weighted average grade on tests.

A weighted average grade will be calculated as follows:

Midterm exams	:	50% (25% each)
Homework	:	15%
Final exam	:	35%

There will be a **gray area** between each two letter grades in the final distribution, so that two students getting the same weighted average could get different letter grades. If you are in one of these gray areas, whether you get the higher or lower grade depends on three factors:

- Class attendance and participation in class,
- Your performance on homework problems
- Whether your midterm exams and homework performance has been improving (your grade goes up) or declining (it goes down).

Course Outline

1. Differentiation and Integration

2. Matrices

3. Ordinary Differential Equations

4. Special Functions

5. Difference Equations

6. Partial Differential Equations