

Yeditepe University, Faculty of Engineering

Chemical Engineering Department

2017 Fall Term

ChBE 311 Computer Applications in CHBE

Course objective: This course aims to help the students to gain the ability to solve the mathematical problems faced in chemical and bioprocess engineering as well as statistical analysis of the collected data.

Instructor: Assist. Prof. Dr. M. Oluş Özbek

Assistant: Beril Gülkaya

Prerequisite: none

Topics:

- Introduction to continuous and discrete functions
- Error analysis
- Root finding in single nonlinear equations, bracketing methods
- Root finding in single nonlinear equations, open methods
- Solution methods for system of linear equations
- Approximation of discrete functions
- Forward and backward differentiation methods
- Central differentiation and integration methods
- Regression and statistical analysis of collected data
- Iterative solution of initial value problems (ODE)

Web-page:

<http://chbe.yeditepe.edu.tr/courses/chbe311/index.html>

Grading:

2 Midterm Exams (25% each)	50%
Final Exam	40%
Quiz/Homework/Project/Attendance	10%

Attendance: 80% Compulsory !!

Exam Dates: To be announced

Course book: Applied Numerical Methods With Matlab For Engineers And Scientists, 3rd Ed., S. Chapra, McGraw Hill 2012.

Additional Materials:

- Numerical Methods for Engineers, 6th Ed. by S. Chapra and R. Canale, McGraw Hill 2006.
- Numerical Methods and Modeling for Chemical Engineers, M. E. Davis, Wiley 1984.
- Problem Solving in Chemical Engineering With Numerical Methods, M. B. Cutlib, M. Shacham, Prentice Hall 1999.