COURSE OBJECTIVES
At the end of the course students should be able to
- Propose a chemical and/or physical process and units for specified product(s) or raw materials
- Apply knowledge of mathematics, science and engineering to analyze a component or system by identifying, formulating and solving engineering problems
- Apply knowledge of mathematics, science and engineering to design a component or system to meet desired needs
- Evaluate the proposed solution with respect to technical, economical, environmental, social, political, ethical, health and safety, manufacturability and sustainability context
- Actively involve in teams during planning, organization of projects, record keeping, documentation
- Present the project results and evaluation through both oral presentations and reports
- Use contemporary literature sources
- Take the advantage of computational resources and available chemical engineering design software
- Have solid understanding of professional responsibility and ethical issues
- Have an awareness of the impact of engineering solutions in a global economic, environmental and social context.

INSTRUCTOR
Dr. Yusuf Uludağ (yuludag@metu.edu.tr), Building D, Room:112
Asst. Canan Aksoy (caksoy@metu.edu.tr)

COURSE SCHEDULE
Wednesday : 13:40 - 16:30 Z-15B
Friday : 13:40 - 15:30 Z-15B

TEXT

GRADING
At the end of the semester grading of this course will eventually be based on your overall performance that will be determined by your reports, exams, homework and group assignments, presentations, group and peer evaluations. Tentative grading policy is set as 10 % MT exams, 15 % pop-quizzes and in class discussion, 60 % Reports and 15 % final exam.
COURSE CONTENT

A- PROCESS DESIGN TOPICS
   I. Introduction to the chemical engineering design.
   II. Chemical process design methodology. Working with constraints and optimization.
   III. Engineering ethics and process design.
   IV. Chemical Route and process selection. Environmental impact, sustainability, safety vs technical constraints.
   V. Process flowsheet development, structure of chemical plants.
   VI. Utilities and energy efficiency.
   VII. Process simulation methods.
   VIII. Materials and construction.
   IX. Cost estimation.
   X. Process safety analysis methods and HAZOP.
   XI. Process instrumentation, process control and safety devices.
   XII. Plant layout.
   XIII. Economic evaluation of a project.

B- DESIGN METHODS FOR COMMON UNIT OPERATIONS
   I. Equipment design parameters, optimization and specification.
   II. Transfer and storage of fluids.
   III. Heat transfer equipment.
   IV. Design of heat exchanger networks.
   V. Reactor design.
   VI. Optimization of separation sequences.
   VII. Design of separation systems.

EXAM DATES:
Midterm Exam: Nov. 25, 2019
Final exam date will be announced later.

Exam dates for ChE 418 will be announced at the beginning of the next semester.

POLICIES
A web page has been constructed for the course. All the course material (syllabus, project and homework assignments, etc.) will be made available through the web page. You need to visit it on a regular basis to get latest announcements, uploads, grades.

http://www.metu.edu.tr/~yuludag/che417/

Reports must be prepared according to the format given. Otherwise they will not be accepted. The report must include appendices section including computer work in printed form, sample calculations, and all the data relevant to the project. Also enclose the computer programs in digital format either on a CD-R or a flash disk.

Each group will make an oral presentation at a designated time for the group.

Attending to the lectures and all class activities such as presentations is compulsory. Attendance less than 80% and missing any assignment and exam will lead to the letter grade of NA.