ChE 365 – Techniques for Process Simulation
Fall 2016

Instructor	Gordana Obuskovic
Location	T 411B
Time	Tuesday, 6-9pm
My office location and hours	upon appointment
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Course Title and Objective: *ChE 365 - Techniques for Process Simulation* (3-0-2)
Prerequisites: ChE 370. Corequisite: ChE 360

The main objective of this course is to assist students in their introduction to ASPEN PLUS simulation software and Polymath software, so that they may model chemical engineering processes and solve problems, especially in preparation for their senior capstone course and reaction engineering course. The course is conducted in a classroom equipped with computers and appropriate software.

Textbook:

There is no specified text book for this course.

Selected Other Resources:

- Handouts and files for download.
- Basic course text books for ChE-210, 240, 349, 360 and 370
  "Elementary Principles of Chemical Processes", Richard M. Felder and Ronald W. Rousseau.
  "Introduction to Chemical Engineering Computing", Bruce A. Finlayson.
  "Transport Processes and Separation Process Principles", Christy J. Geankoplis.
  "Elements of Chemical Reaction Engineering", H. Scott Fogler and M. Nihat Gürmen.

Summary of Topics Covered:

1. **ASPEN PLUS**
2. **POLYMATH**
3. **EXCEL**

Grading scheme:

Exam 1	25%
Exam 2	25%
Final Exam	30%
HWs and/or Project	20%

A final course grade will be assigned on the following basis:

90+	A
85+	B+
80+	B
75+	C+
70+	C
65+	D
<65	F

Policies:

1. Students are encouraged to do their homework. Each assignment will be reviewed the following class. Only selected HWs will be graded. Possible project will be assigned mid semester.
2. Students are responsible for the material covered in class. Regular class attendance is expected.
3. Make-up exams and "incompletes" may be given under extraordinary circumstances and at the sole discretion of the instructor. Regular class attendance is expected.
4. The in-class assignments handed in every class are due towards the end of the class. Failure to follow these instructions will result in loss of points.

Relevant ABET Course Outcomes:

a) An ability to apply knowledge of mathematics, science, and engineering.

c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

e) an ability to identify, formulate, and solve engineering problems.

k) an ability to use the techniques, skills and modern engineering tools necessary for chemical engineering practice.

Relevant ABET Program Objective:

1. ***Engineering Practice:*** Alumni from our program are successfully engaged in the practice of chemical engineering within industry, academe and government**,** working in a wide array of technical specialties including**,** but not limited to**,** process and plant design operations.

Schedule

Week 1: Introduction; Aspen Plus software. Equation of State.
Week 2: Vapor-liquid equilibria
Week 3: Mass Balance
Week 4: Exam 1
Week 5: Thermodynamics and simulation of mass transfer equipment
Week 6: Distillation and Distillation Column Types
Week 7: Process simulation
Week 8: Exam 2
Week 9: Polymath: ODE's and Regression
Week 11: Chemical Reactors Polymath
Week 12: Aspen Plus: Reactor and Reactor Types,
Week 13: Aspen Plus: Absorption Processes and Absorption Column Types
Week 14: Project Presentation
Week 15: Course Review/Summary
Final Exam to be administered during scheduled Final Exam block

Depending on when CSTR, Plug flow reactor, absorption and distillation columns are covered in CHE349 and CHE360, Aspen Plus class on those topics will follow after. Therefore, above listed class schedule might be modified accordingly.

The NJIT Honor Code and standards of *academic integrity* will be enforced in this course. Any violation will be brought to the immediate attention of the Dean of Students.