NEW JERSEY INSTITUTE OF TECHNOLOGY – OTTO H. YORK DEPARTMENT OF CHEMICAL, BIOLOGICAL, AND PHARMACEUTICAL ENGINEERING

CHE 360 -102 – Separation Processes I

Spring 2018

Instructor:	Dr. Alexandre Ermoline
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Office Hours:	By appointment
Class Meets:	Central King Building 266
Class Meeting Times:	F from 6:00 PM to 9:05 PM
Required Textbook:	Transport Porcesses and Separation Process Principles, by C. J. Geankoplis, published by Prentice Hall, Upper Saddle River, NJ. ISBN 0-13-101367-X. 4th edition, 2003.
Required Software:	Latest versions of Matlab, MS Office (all can be downloaded from NJIT IST webpage). Student Mall labs and ChE department PC lab have most of the software. Please, see Highlander Pipeline for Matlab tutorial and example programs.
Course Prerequisite:	CHE 210, 240, 260, 342, 370
Course Description:	This is the first course in separation and examines traditional methods and technologies of separation and purifying mixtures. Emphasis is here on absorption, stripping, and distillation.
Course Objectives:	1. To develop the students' skills in modeling the separation processes by both graphical and analytical techniques. 2. To provide students with the basic knowledge how to design strippers, absorbers, and distillation columns.

Grading:

Homework	15 %
Quizzes	10 %
Project	10 %
Test 1	20 %
Test 2	20 %
Final Exam	25 %
	Total= 100 %

Letter Grades (Tentative - Subject to Change): **A** → 90 – 100% ;
B+ → 84 – 89% ; **B** → 78 -83% **C+** → 72 – 77% ; **C** → 66 – 71% ; **D** → 60 – 65%
F → 0 – 59%

Course Policy:

Homework will be assigned through Moodle: http://moodle.njit.edu – Please, check this site and your e-mail often. Most of the homework, problem solutions, lecture handouts, and some of the quizzes will be on this site.

Quizzes will be either posted on Moodle or given occasionally at the beginning or end of the class. If you miss the class, you will miss the quiz that day. There will be no makeup quiz! Close book and close notes!

Project - work in groups (you form). A Peer & Self Evaluation will be done at the conclusion of the project that will impact your grade; more details later.

All exams are Open Textbook unless otherwise specified.

Attendance will be taken. Students are expected to attend all classes and on time. Experience shows that students wh odo not regularly attend class typically perform poorly in the course. In addition, examples are worked out during the lectures. These examples may not be posted online. Students are responsible for all material covered in class.

A letter grade is based on the weighted average score, a table of average score-letter grade categories. The scale converting numerical to letter grades may be changed.

If a student has questions about the grade he/she has received on an exam, homework, or group activity, he/she must talk to the instructor (or the teaching assistant where appropriate) no later than a week after the graded activity has been returned to students. No grade change will be made after the one week period.

Course Outcomes (ABET):

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.
d). an ability to function on multi-disciplinary teams
e) an ability to identify, formulate, and solve engineering problems
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills and modern engineering tools necessary for chemical engineering practice

Below is a TENTATIVE class session schedule. This schedule is subject to change at any time. Please be aware of any changes that are announced in class by either contacting a classmate or else by contacting me via e-mail.

CHE 360, Spring 2018, TENTATIVE SCHEDULE, Alexandre Ermoline

WEEK START	Class Material	Textbook Sections
JAN 19	General Introduction to Separation Processes. Gas-Liquid Equilibrium. Single and Multiple Equilibrium Stages.	10.1 -10.3
JAN 26	Mass Transfer Between Phases.	6.2A-6.2C, 7.2B, 10.4
FEB 02	Absorption and Stripping in Plate and Packed Towers. Design of Plate Towers.	10.6A-10.6D
FEB 09	Design of Packed Towers.	10.6E-10.6G
FEB 16	**Test 1**	
FEB 23	Design of Packed Towers. Estimation of Mass Transfer Coefficients for Packed Towers.	10.7, 10.8
MAR 02	Vapor-Liquid Equilibrium. Simple Distillation Methods.	11.1-11.3
MAR 09	Distillation with Reflux. McCabe-Thiele Method. Forming Groups. Assigning Projects.	11.4
MAR 16	**Spring Recess**	
MAR 23	McCabe-Thiele Method.	11.4
MAR 30	**Good Friday – No Class**	
APR 06	**Test 2**	
APRIL 13	Distillation and Absorption Efficiencies.	11.5
APRIL 20	Enthalpy-Concentration Method.	11.6
APRIL 27	Distillation of Multicomponent Mixtures.	11.7
MAY 01	Distillation of Multicomponent Mixtures. Course review. Project deadline.	11.7
TBA	**Final Exam**	