DEPARTMENT OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE
WAYNE STATE UNIVERSITY

CHE4800 - CHEMICAL PROCESS INTEGRATION
Winter 2017

Credit Hours: 3
Class Time: 5:30 - 6:50 p.m., MW
Classroom: 0124 MANO
Course Ref. No.: 20573
Instructors: Dr. Yinlu Huang
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Dr. Cristina Piluso
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Teaching Assistant: Majid Moradi Aliababi; Email: fr1539@wayne.edu; Office: Room 2404, Eng. Bldg.;
Phone: (313) 577-1949
Office Hours:
Jan. 9 – Feb. 7: 10:30 - 11:30 am, Monday (Majid Moradi Aliababi) and Wednesday (Huang)
Feb. 8 – Mar. 7: 10:30 - 11:30 am Monday (Majid Moradi Aliababi)
4:30-5:20 pm, Wednesday (Piluso; 1118 Eng. – Dept. Conf. Rm.)
Mar. 8 – April 24: No regular office hour, all by appointment

TEXTBOOK

References:

GOALS
This course is intended to:
(1) Teach students basic principles and methodologies for energy and material integration for sustainable process synthesis and design.
(2) Test students’ ability of solving a national process design problem, the 2017 AIChE National Student Design Competition problem.

Learning outcome:
(1) Students will be able to apply basic process design theory and methods to analyze process system’s economic, environmental, and technical performance.
(2) Students will be able to design process networks through heat and mass integration for energy consumption and waste reduction.
(3) Students will understand basic concepts of process sustainability and basic sustainability assessment methods practiced in industries.

COURSE CONTENT
This course is designed to have the following two periods:
Period 1: January 9 (Monday) – March 7 (Wednesday)
Topics: (i) Heat integration through designing heat integrated process networks, (ii) mass integration through designing mass exchange networks, and (iii) basic elements of industrial sustainability improvement through process integration.
Tests: Feb. 6 (Monday) and March 6 (Wednesday)
Period 2: March 8 (Monday) – April 24 (Monday)
Task: Students work on the AIChE National Student Design Project.
Class 1: Project brochure distribution: March 8 (Monday), 5:30 PM
1st deadline: April 7 (Friday, 5:00 PM), eligible for obtaining A grade as the highest and also for participating in the AIChE National Design Competition
2nd deadline: April 14 (Friday, 5:00 PM), eligible for obtaining B+ grade as the highest
3rd deadline: April 21 (Friday, 3:00 PM), eligible for obtaining C+ grade as the highest
Class 2: April 24 (Monday), student oral presentation
Note: Project report submitted after the third deadline will lead to an F grade for the project.

GRADING POLICY
  Homework – 16%; Tests – 34%; AIChE design project – 50%

WSU DESIGN PROJECT
• The AIChE design project can be accomplished by either an individual student working entirely alone or a group of no more than three students working together.
• Each student will be asked to determine if he or she will work alone or with others during the class on March 8. After the class, students will not be allowed to make any change of grouping.
• Each team must have a team leader who should be responsible for dividing the project nearly equally into several sub-projects for team members, and should state very clearly the accomplishment by each team member in the cover letter of the final project report. This is considered part of the team leader’s grade. Team members may obtain different grades. Note that a team member with a minor responsibility, or with poor accomplishment, may have a very low grade, such as D or E. In this case, the team leader will be penalized as well.
• Any student who is not able to submit his or her final report on April 7 or 14 must submit a one-page memo report on the 2nd and 3rd deadlines. The memo report should state the progress of the project and the plan of the accomplishment.
• For individuals or teams, the project may NOT be discussed with anyone (students, faculty, or others in or out of class) during the period allowed for solutions. Other rules are printed in the contest statement.
• The final report must be typed. Its format is given in the project statement.
• Cheating will not be tolerated in this course, and will be severely penalized.
• The class on April 24 will be arranged for students to present their solutions to the AIChE National Design Contest Problem. The class attendance is required. Any absence may lead to 5% reduction of the score earned for the project.

PREREQUISITES/CO-REQUISITES
Prerequisites and co-requisites are checked automatically at the time of registration. However, it is ultimately a student's responsibility to make certain that they have the prerequisites and co-requisites for a course. Students must remain registered for a co-requisite course throughout the semester. Advisors will check course prerequisites and co-requisites during the 5th and 6th week of the semester. Student found to be registered for a course without meeting these requirements, and without an official waiver on file, will be administratively withdrawn from the course.

POLICY ON CHEATING
Cheating is defined by the University as “intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information, or assistance in any academic exercise.” Evidence of fabrication or plagiarism, as defined by the University in its brochure – Academic Integrity, will also result in downgrading for the course. A student who cheats on any submitted assignment or during examination may be assigned an “F” grade for the course.