

CHEN 4460 - PROCESS SIMULATION, SYNTHESIS, AND OPTIMIZATION

- Catalog Data:** **CHEN 4460: PROCESS SIMULATION SYNTHESIS AND OPTIMIZATION (3).**
Lec. 1, Lab 3. Pr. completion of CHEN 3370, 3630, 3650, 3660, 3700 with grades of C or better. Coreq. CHEN 3820. Fundamentals of computer-aided simulation and synthesis. Process integration and optimization principles including their applications in design, retrofitting and operation of chemical processes.
- Instructor:** Dr. Mario Richard Eden
222 Ross Hall
Office Phone: (334) 844-2064 Cell Phone: (334) 329-8958
E-mail: edenmar@auburn.edu
Class Webpage: <http://www.eng.auburn.edu/users/edenmar/4460.htm>
Office Hours: Tuesday 1:00 - 3:00 PM + Any time I am at the office.
- Class Schedule:** Lectures: Tuesday 9:30 - 10:20 AM (136 Ross Hall)
Makeup Lectures: Will be scheduled as the need arises.
Labs: Section I: Tuesday & Thursday 11:00 AM - 12:20 PM (Ross 306)
Section II: Tuesday & Thursday 6:30 - 7:45 PM (Ross 306)
- A large component of the lab sessions is in a novel multimedia form, which requires the use of headphones. Headphones for the semester can be checked out from Dr. Eden or the GTA's.
- Assistants:** Wei (Vivi) Yuan (Aspen Lab Assistant/Grader) Charlotte Stewart (Aspen Lab Assistant/Grader)
E-mail: yuanwei@tigermail.auburn.edu E-mail: stewach@tigermail.auburn.edu
Office Hours: Wednesday 8:00 AM – 10:00 AM Office Hours: Thursday 1:00 PM – 3:00 PM
Location: Ross 132 Location: Ross 306
- Md Mahmoud (Class Homework Grader)
Email: mam0054@tigermail.auburn.edu
Office Hours: TBA
Location: TBA
- Textbooks:**
- Seider, W.D., J.D. Seader, D.R. Lewin, S. Widagdo "Product and Process Design Principles", 3. Edition, Wiley (2008).
 - Eden, M. R., "ASPEN Lab Notes", Auburn University – Posted as PDF on class website.
- References:**
- El-Halwagi, M. M. "Pollution Prevention through Process Integration: Systematic Design Tools", Academic Press, San Diego, 1997.
 - Douglas, J. M., "Conceptual Design of Chemical Processes," 1988, McGraw Hill, New York.
- Goal:** This course is intended to introduce students to the fundamentals of computer-aided process synthesis, simulation, analysis and optimization. In particular, the course presents systematic tools for developing and screening potential process flowsheets. Students use a commercial process simulator (ASPEN PLUS) to aid in evaluating a variety of these process designs. Practical problems are used as examples. These problems include heat-integration, separation processes and environmentally benign designs. Using a commercial solver package (LINGO) students are introduced to the formulation and solution of linear and nonlinear mathematical optimization problems for chemical engineering applications.
- Grading:** Simulation Project (5%), Homework (15%), Midterm (30%), Final exam (50%)
- Attendance:** Class attendance is not required (but, remember, there may be unannounced quizzes).
- Special Needs:** Any students requiring special accommodations should contact the Director of the Program for Students with Disabilities.