

Advanced Special Topics in Transport Phenomena

CHEN 4970 SP24

Course Syllabus

Instructor: W. Robert Ashurst, 0120 Brown Kopel, 844-2502, ashurst@auburn.edu

Office Hours: By appointment as needed.

Lecture: TBD – or – T, 5:00 – 5:50 PM, Ross 136.

Objectives: Introduce advanced concepts of transport phenomena and applied mathematics for chemical engineering applications.

Required Text: Bird, Stewart and Lightfoot, *Transport Phenomena*, Revised 2nd edition, John Wiley and Sons, New York, 2007. (ISBN: 0-470-11539-4)

Required Multimedia: Lecture Videos by Dr. Ashurst from CHEN 7100 FA13. These materials will be provided through Canvas/PanOpto. Students should view approximately three videos per week, each week.

Webpage: <http://www.eng.auburn.edu/~ashurwr/classes.html> Additional course information will be posted on the web. You are expected to look at the web site before classes for new information.

Grades: The overall course grade will have one component - participation. This course is aimed at preparation for postgraduate education. It is expected that every effort will be made to learn the course material. Due to the heavy “performance” nature of the preparation, course grade will be based in participation in discussions and work sessions associated with the course. Participation includes attendance of work sessions, engaging in discussion and providing feedback. Unexcused absences count against participation at a rate of three absences per letter grade.

Make-up Classes: In the event of university cancellation of classes (due to weather, for example), make-up classes as appropriate may be scheduled at irregular times or locations.

Homework: Homework assignments (if any) are to be turned in at the beginning of class on the day they are due. No late homework will be accepted unless an agreement is made with Dr. Ashurst before the due date. Homework is required to follow the standard departmental format, which will be explained in the first lecture. Homework or other assignments will not be accepted by e-mail or fax unless previously arranged with Dr. Ashurst. Completion of homework assignments counts toward course participation.

Quizzes: Quizzes (announced or unannounced, if any) may be given during the first or last 5 to 15 minutes of a work period. Quizzes are closed book and may contain multiple choice, true/false, short answer questions, or problems similar to the homework and examples. Completion of quizzes counts toward course participation.

Exams: There are no exams in this course.

Policies: If you would like to meet with Dr. Ashurst (e.g., for additional office hours), a time can be arranged. To set up this meeting, please contact Dr. Ashurst by e-mail. University excused absences must be resolved within one week after the student returns to class. Policies regarding class attendance and academic dishonesty are specified in the Tiger Cub Student Handbook and the Department of Chemical Engineering policies. Academic dishonesty will be reported to the Academic Dishonesty Committee. Students who need special accommodations are asked to arrange a meeting the first week of classes, or as soon as possible if accommodations are needed immediately. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with the Program for Students with Disabilities, 1244 Haley Center, 844-2096.

Course Reader: Dr. Ashurst has prepared a course reader for CHEN 7100/7106. This document may be useful for CHEN 4970 and will be supplied to the students through Canvas.

Website and E-Mail: Homework assignments and other course material will be accessed through the website and/or through Canvas. This syllabus will be the only handout you receive. Students are expected to check the course website and their e-mail regularly. The university recognizes e-mail as an official form of communication. Notification of significant changes in the content of the class website will be conducted through e-mail. **When sending e-mail to Dr. Ashurst, you must specify at least “CHEN 4970 SP24” (without quotes) in the “subject” field. Dr. Ashurst ignores course related e-mail messages that do not conform to this requirement.**

Tentative Schedule:

1. Course Introduction (1 lecture, week 1)
2. Vector and Tensor Mathematics (5 lectures, weeks 1, 2)
3. Basic Principles of Transport Phenomena (5 lectures, weeks 3, 4)
4. Momentum Transport (12 lectures, weeks 4-8)
5. Energy Transport (10 lectures, weeks 8-11)
6. Mass Transport (7 lectures, weeks 12-14)