

	2017		1		CHEB305		01
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Chemical Reaction Engineering deals with systems within which chemical reactions are occurring, concentrating on trying to define the size of reactor required for a specified duty and the desirable flow mixing pattern which should be promoted within the reactor. It does neither concern itself with the materials from which the reactor should be made, nor the thickness of its walls for instance. Reactor design utilizes knowledge of thermodynamics, fluid mechanics and chemical kinetics, coupled of courses with an economic assessment of whether the proposed design is financially attractive. This course will enable ChE students to develop a clear understanding of the fundamentals of chemical reaction engineering. The goal will be achieved by presenting a course material that allows the students to solve reaction engineering problems through reasoning rather than through memorization and recall of numerous equations and the restrictions and conditions for reactor design.

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Undergraduate Thermodynamics

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Final grading will be done on an absolute basis.#

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Grading:#

Mid exam I 30%/Final exam 30%#

Quiz I & II 14%#

Home works (7 sets) 21%/Attendance 5%#

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All exams will be open book and open note. Make-up exam. will be given only by prior arrangement and only with valid reason. University policy states that anyone giving or receiving information during an exam. will be given an immediate failing grade for the course.#

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Homework assignments will generally be given on a weekly basis. Homework will be collected on Monday. Late homework will not be accepted for any reason and will be given a grade zero. Professional collaboration on homework among students is allowed. However, outright copying is considered cheating and will result in a zero grade.

				ISBN

H. Scott Fogler, "Elements of Chemical Reaction Engineering", 4th Ed., Prentice Hall, 2006#

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J.M. Smith, "Chemical Engineering Kinetics", 3rd Ed., McGraw-Hill, 1981 and G.F. Froment and K.B. Bischoff, "Chemical Reactor Analysis and Design", Wiley, 1990

(see ChE305 course syllabus)#

1. Reactions and Reactors (2 Lectures)#

-Chapter 1#

2. Conversion and Reactor sizing (2 Lectures)#

-Chapter 2#

3 Rate Laws, Reaction mechanism and Stoichiometry (3 Lectures)#

-Chapter 3 and 7.1#

4. Collection and Analysis of Rate Data (2 Lectures)#

-Chapter 5#

5. Isothermal Reactor Design (5 Lectures)#

-Chapter 4#

Review (1 Lectures)#

Midterm Exam#

6. Multiple Reactions (3 Lectures)#

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-Chapter 6#

7. Steady State Nonisothermal Reactor Design (6 Lectures)#

-Chapter 7#

8. Unsteady State Nonisothermal Reactor Design (3 Lectures)#

-Chapter 8#

Review (1 Lecture)#

Final Exam

EXTRA CREDIT - No extra credit projects will be accepted to "boost" one's grade.#

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LECTURE ATTENDANCE - Lecture attendance may not be mandatory. The student, however will be responsible for all lecture and handout materials.