

OUTLINE OF CHEMICAL ENGINEERING 4K3/6K3: Sep-Dec, 2017
Reactor Design for Heterogeneous Systems

Instructor: Dr. P. Mhaskar (JHE-345A; Ext. 23273; email: mhaskar@mcmaster.ca)

TA: TBA (please see avenue)

Lectures: Mon, Wed 11:30-12:20, Fri 1:30-2:20 BSB 120

Tests: Schedule:
In-Class Test: Wed Oct 4
Group submission due October 6 by 12:00 noon
Mid Term Test: October 25 evening, MDCL 1105
6:30-8:30 PM
Group submissions due October 27 by 12:00 noon

Notes: The tests and the exam will be open book and open notes.

Examination: Final examination, 2.5 hours.

Calculators: Any calculator may be used in the tests and final exam.

Grading:	Assignments	8 %	of final grade			
	Graded Workshops	12 %	“	“	“	“
	Mid-term (in class)	18 %	“	“	“	“
	Mid-term (group)	2 %	“	“	“	“
	In-Class Test	7 %	“	“	“	“
	In-Class Test (group)	1 %	“	“	“	“
	Term project	12 %	“	“	“	“
	Final exam	40 %	“	“	“	“

For the graded workshops, your **two** worst grades will be dropped **if you score more than 90% on the rest.**

A mark of over 95% on the final exam will result in your letter grade being moved two steps higher (e.g., a B- will become a B+)

Revisions to the assignments/solutions/grades/Tutorials and announcements will be posted on avenue. All assignments, workshops Term project, and take home versions to the test are to be done in groups of two (except for graduate students, who need to do it individually). The final percentage grades will be converted to letter grades using the Registrar's recommended procedure. Adjustments to final grades may be done at the discretion of the instructor. No make-up midterms will be given. Marks of missed midterm/tests (with an official missed mark form) will be moved to the final exam. As well, graduate students are required to present a review of a journal article.

Note: Late assignments will not be accepted.

Required Text:

Courseware available from Gilmour Hall B101.

Supplementary References:

1. H.S. Fogler, *Elements of Chemical Reaction Engineering*, Prentice-Hall, 4th Edition, 2006, Chapters 1,10-12, parts of Chapters 13&14.
2. J.M. Smith, *Chemical Engineering Kinetics*, McGraw-Hill (1981), 3rd Edition.
3. O. Levenspiel, *Chemical Reaction Engineering*, 2nd Edition, Wiley (1972). 3rd Edition (1999).

Objectives

Enable the students to develop an understanding of Advanced Reactor Design including Catalytic kinetics, mass transfer limitations, packed and fluidized bed reactors and two phase reactors.

POLICY REMINDER:**Academic Integrity:**

You are expected to exhibit honesty and use ethical behavior in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <http://www.mcmaster.ca/academicintegrity>

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.