

# POLYMER PROCESSING

Department of Chemical Engineering  
CHEM ENG 4X3/6X3

## COURSE OUTLINE 2017/2018

INSTRUCTOR: Dr. M. Thompson    JHE A411    Ext. 23213    [mthomps@mcmaster.ca](mailto:mthomps@mcmaster.ca)

TEACHING ASSISTANTS:    TBA

SCHEDULE: Lectures: TSH B106; T,W, F 12:30-1:20 pm

**COURSE OBJECTIVES:** This course will introduce the student to the basic principles of polymer processing, stressing the development of models which have aided engineers in understanding the fundamental aspect of this field. Efforts will focus on extending transport phenomena to the specific behavior of polymers and acquaint students with the machinery typically of the field of polymer processing.

**RESOURCES:** Required courseware – *ChE 4X03/6X03 – Introduction to Plastics Processing, by J. Vlachopoulos. NO course notes will be posted on the website for reasons of copyright regulations.*

**CALCULATORS:** Only a McMaster Standard Calculator may be used for the mid-term and final exam.

**WEBSITE:** The electronic version of the course outline is more up-to-date and supersede any paper copies in relevance. All content for the course, including the outline, will be found on the course's site on AVENUE.

**GRADING:** The following table\*\* shows the contribution of components to the final grade,

4X3	Assignments (5)	10%
	Midterm*	30%
	Final Examination	60%
6X3	Assignments (5)	10%
	Midterm*	20%
	Project	20%
	Final Examination	50%

\*\* The instructor reserves the right to alter the evaluation scheme if necessary

**\*Note: No make-up mid-terms. Midterm 1 – Oct 24 12:30-1:20; room TBA (worth 12%), Midterm 2 – November 21 12:30-1:20 am room TBA (worth 18%)**

The final grade percentage will be converted to letter grades using the Registrar's recommended procedure. Adjustments up or down to the final grades may be done at the discretion of the instructor.

#### NOTES:

Email – Each class member is expected to have a McMaster e-mail address with available free space to receive communications from the instructor and are expected to read their emails daily. Occasionally, important information to the class will be transmitted by e-mail. Hotmail, Netscape, and other e-mail services are often blocked by our servers due to spam/virus filters, and the student will miss out on important information regarding their class – do not forward your McMaster e-mail to these accounts, nor attempt to send me e-mail which you consider vital from these types of accounts. Those who do not have a McMaster e-mail account should register before the second class.

My e-mail address is [mthomps@mcmaster.ca](mailto:mthomps@mcmaster.ca). I will respond to e-mails sent on the weekend on the first workday back. E-mail is often the most convenient manner of corresponding unless the need is urgent. Do NOT attempt to contact the instructor from AVENUE. It does not allow replies and the e-mail system on AVENUE is not watched by the instructor.

McMaster Student Absence Form (MSAF) –In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work”. Please note these regulations have changed beginning Spring/Summer 2015. All missed work requires a student to submit a MSAF else receive a zero grade. With an MSAF the work is exempt and the value of the missed work is added to the value of the final exam. This includes the mid-terms.

Students are reminded that it is the policy of the Engineering faculty that students are responsible to follow up with the instructor directly once filing an MSAF, and ensure that the MSAF was received by the instructor. Often when the student has not received a reply it is due to the fact that an incorrect email address was given to the MSAF system for the instructor.

Lectures – The lectures are intended to expand upon key points and allow discussion of these concepts. However, there will not be time to cover all topics given in the courseware in class yet the student **remains responsible to know all material in the courseware** for tests and exams.

Midterm/Final Exam – Students will be allowed to bring in one (1) 8.5” x 11” cribsheet with hand-written notes on **both sides** and an Engineering-approved calculator into the midterm and two (2) 8.5” x 11” cribsheets with hand-written notes on **both sides** into the final examination. **No other references will be allowed. Cribsheet can only contain definitions – no equations and** no content from the assignments\* or notes may be included.

Example of a definition as it may show on the cribsheet:

Crystal melting temperature ( $T_m$ ) – the peak temperature during melting of the polymer crystals whereby all small crystals have melted.

Cribsheets will be checked\* by the instructor during the mid-term or final exam.

Midterms not written in pen will not be considered for re-marking. Any evidence of copying or use of unauthorized aids (including cell phones, PDA, blackberry, etc.) will be treated as a case of academic dishonesty and referred to the Academic Integrity Officer. For more examples/definition of academic dishonesty, see the discussion below. **Special note:** All wireless devices (cell phone, etc.) are to be turned off for midterm and the final exam – the instructor may impose a 10% penalty on anyone disrupting the examination.

*\* the instructor is looking for equations or descriptions of equations to be used leading to an answer for a specific assignment or old exam/midterm problem (current year or previous years Ask the instructor well before the midterm or exam if there are concerns.*

**Snow Day Policy** – In the event of a “**snow day**” (however unlikely), a midterm will be give one week after its original date in the lecture period. In the event of a “**snow day**”, assignments are due the next class, at the end of class.

**Homework** – Homework will be due by the end of the class on the day it is due. A 10% penalty is applied to any homework handed in on the due date but after the class until 4:00 pm. Late assignments are to be submitted to the drop-box in front of JHE/374 – this box is emptied daily at 4:00 pm. Homework assignments **will not be accepted after 4:00 pm** on the day they are due nor any day thereafter. Excused lateness must be worked out with the professor **before** the assignment is due, else you must present suitable documentation to the Associate Dean’s office and have an MSAF filled out. Blatant copying or cloning of assignments will be treated as academic dishonesty and dealt with in a formal manner. You are encouraged to work on the problems with your colleagues and to seek the assistance of the TAs or professor if necessary, but direct copying of the solutions from another student or any other source is **not acceptable**.

#### **Typically homework will be due –Wednesdays**

All homework must be done on 8.5 x 11” paper. The work must be neat with intermediate calculations and assumptions shown (**Note:** often the final answer has little or no value to the mark for the question). Failing to hand in neat, legible assignments, the TA has the right to remove 10% off of the final mark of the assignment. Consistent units must be shown at each step of your calculations and use diagrams as part of your solution whenever possible. The final answer with units must be clearly identified.

- Everyone working alone must submit their own assignment with **name and student number must be on the top of each page.**
- Students are encouraged to work with others but **MUST** state who these people were on top of the front page of their assignment, just under their own name. All declaration must be made before an assignment is handed in – we will not accept a declaration after the assignment has been noticed to be copying someone else’s. Making this declaration does not mean that assignments may be cloned or photocopied. **Any assignments that are deemed to be identical in solution yet the students were not declared as having worked together will be treated as a case of academic dishonesty.**

Assignments done in pencil will not be re-marked (which also applies to exams or tests).

Report (6X03 ONLY) – Graduate students must complete a report on a topic of interest from the course. The work will provide a critical review of the literature in the chosen area. Students must confirm the topic with the instructor before starting to write. The report is a maximum of 20 pages long (including figures and tables but not the cover page or table of contents), double-spaced using Times New Roman 12-point font. The margins on a 8 ½” x 11” page are to be 1” on all sides. Headings are to be bold but remain in 12-point font. The title can be in 14-point font. Student’s name and ID, and the title of the report are to be stated on the cover page only. References should be indicated in the textbody as a numeral, ex. [1], and listed at the end of the report under their own section in the order they appeared in the textbody. All references should adhere to the style for the Journal ‘Polymer Engineering and Science’.

Reports are to be submitted in a Microsoft Word compatible format, e-mailed directly to the instructor. Reports are due the last day of lectures by 12:00 noon.

Recording devices in lecture – No video recording or image taking devices are allowed to be used in the lecture hall and examination room without written permission by the instructor. This includes technologies with multiple purposes, such as cell phones, tablets, or Google glass. Violators will be removed from the class and may possibly be banned from returning.

Cell Phones and Laptops/Tablets – Phones are not allowed to be used in lectures or tutorials without permission by the instructor. These devices are disruptive to the class, so students are required to leave the room if they must be used. Refer to further policies above in regards to tests and exams. Laptops and tablets are permitted in the class for the sole purpose to take notes. Any other use of a laptop or tablet that is disruptive to the class, particularly the students around said person, or is contravening the recording policy above will be asked to turn off the device or required to leave the class room.

### **Policy Reminders:**

*The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem, that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact their Department Chair or the Sexual Harassment - Anti-Discrimination Officer, as soon as possible.*

*Students are reminded that they should read and comply with the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office.*

#### *Academic Integrity:*

*You are expected to exhibit honesty and use ethical behaviour 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.*

*Policies Addendum*

*The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.*