

**WINTER 2014**

**MSE 512, CHE 512, MACRO 512: POLYMER PHYSICS**

**Administrative Details:**

Instructor: Anish Tuteja

Office: 2046 H.H. Dow and Bldg. 10 – A185, NCRC

Lecture: 4.30 – 6 PM Mo, We

Office Hours: 2 – 3.30 PM, Friday

**Textbook:** *Polymer Chemistry*, Paul C. Hiemenz, Timothy P. Lodge, 2<sup>nd</sup> Edition, CRC Press

**Reference Text:**

1. *Principles of Polymer Chemistry*, Paul J. Flory (1953)
2. *Polymer Physics*, Michael Rubinstein, Ralph H. Colby
3. *The Physics of Polymers: Concepts for Understanding Their Structures and Behavior*, 3<sup>rd</sup> Edition, Gert Strobl.  
Available Online from UM libraries at: <http://mirlyn.lib.umich.edu/Record/005702003>

**Grading:**

Midterm 1: 30%

Final Exam: 40%

Homework: (6-7 Problem Sets): 30%

## **COURSE OUTLINE**

Ch 1 (H&L<sup>1</sup>): Introduction to Chain Molecules

Ch 6 (H&L): Polymer Conformations

Ch 7 (H&L): Thermodynamics of Polymer Solutions

### **MIDTERM 1 (Feb. 26, 2014)**

Ch 9 (H&L): Dynamics of Dilute Polymer Solutions

Ch 12 (H&L): Glass Transition

Ch 13 (H&L): Crystalline Polymers

Ch 10 (H&L): Networks, Gels, and Rubber Elasticity

### **FINAL EXAM (Thursday, April 24, 10:30 AM – 12:30 PM)**

<sup>1</sup>H&L: *Polymer Chemistry*, Paul C. Hiemenz, Timothy P. Lodge, 2<sup>nd</sup> Edition, CRC Press