CHEM ENG/CHEM C178 Polymer Science and Technology
Spring 2018

Lectures	MWF 11-12,
Instructor	Nitash P. Balsara nbalsara@berkeley.edu Office Hours: Mondays 9-10 am, 201C Gilman
GSI	Clay Batton chbatton@berkeley.edu Office Hours: Time and Location TBD
Textbook	*Polymer Chemistry*, 2nd Edition, Paul C. Hiemenz and Timothy P. Lodge The class will follow the book and homework assignments will include questions from the text.
Website	bcourses.berkeley.edu
Homework	Due at the start of class on specified dates. No late homework accepted. One homework grade dropped.

Grading		
	Homework	20%
	Midterm	30%
	Final	50%

This course serves as an introduction to polymer synthesis, characterization, and the physical properties of polymeric materials.

DATE	LECTURE TOPIC	READING	HW DUE
Week 1	Introduction, molecular weight, classifications, nomenclature	Chapter 1	
Week 1	Measurement methods, synthetic strategies		
Week 2	Step-growth polymerization	Chapter 2	#1, 1/24
Week 3	Chain-growth polymerization	Chapter 3	
Week 3	Molecular weight distributions and chain transfer		#2, 1/31
Week 4	Anionic, cationic polymerization	Chapter 4	
Week 4	Controlled Radical polymerization		
Week 4	Ring-opening polymerization		#3, 2/07
Week 5	Copolymerization	Chapter 5	
Week 5	Microstructure and sterioregularity		#4, 2/14
Week 6	Conformations and bonding, chain models	Chapter 6	
Week 6	Radius, end-to-end distance, and polymer structures		#5, 2/21
Week 7	Solution thermodynamics	Chapter 7	
Week 7	Phase behavior and Flory-Huggins		#6, 2/28
Week 8	Light, X-ray, and neutron scattering	Chapter 8	
Week 8	Self-assembly of block copolymers		
3/09	MIDTERM		
Week 9	Dynamics of dilute solutions	Chapter 9	
Week 9	Solution characterization of polymers		#7, 3/14

Week 10	Networks	Chapter 10	#8, 3/21
Week 11	SPRING BREAK		
Week 12	Linear Viscoelasticity	Chapter 11	#9, 4/04
Week 13	Glass transition	Chapter 12	#10, 4/11
Week 14	Crystalline polymers	Chapter 13	#11, 4/18
Week 15	Emerging applications: polymer solar cells, plastic electronics, plastic lithium batteries		
5/08 7-10PM	FINAL EXAM, LOCATION TBD		