

SYLLABUS

Polymer Chemistry CHEM 4534 (CRN: 91516)

Fall 2006 Class Schedule

ChemPhysics 402, Tuesday and Thursday

11:00-12:15 p.m.

Instructor: Prof. Tim Long

Class Office Hours: To be announced in class on a weekly basis

Exam Help Sessions: To be announced in class prior to all exams

TEXT (required): Malcolm P. Stevens, "Polymer Chemistry: An Introduction" (available in bookstore)

<u>Class Date</u>	<u>Class Topic</u>
Aug 22	Welcome Back and Introduction to the "Language" of Organic Polymer Chemistry (Non-comprehensive Review)
24	Introduction to the Polymer Parameters
29	Overview of Polymer Thermal and Mechanical Properties (Guest Lecture)
31	Laboratory Practical I: "Tour of Polymer Characterization Tools" (Lab)
Sept 05	Chain Polymerization: Initiation, Propagation, and Termination
07	Chain Polymerization: Copolymerization
12	Laboratory Practical II: "Tour of Polymer Characterization Tools" (Lab)
14	Chain Polymerization: Copolymerization
19	Chain Polymerization: Living Polymerization
21	Chain Polymerization: Tailored Macromolecular Architectures and Supramolecular Chemistry
26	Polymer Processing: "The Soft Drink Bottle and Rheology"
28	Step-Growth Polymerization: Mechanistic Introduction
Oct 03	EXAM ONE
05	Step-Growth Polymerization: Polyesters and Polyamides
10	Step-Growth Polymerization: Polycarbonates and Polyurethanes
12	Step-Growth Polymerization: Ring-Opening Polymerization
17	Polymer Cross-linking: Epoxies and Polyimides
19	Polymer Cross-linking: Adhesives and Photo-chemical Reactions
24	Advanced Polymer Characterization: Molecular Weight
26	"Science in the Movies": Flubber and CSI: Are they correct?"
31	Advanced Polymer Characterization: Chemical Structure
Nov 02	Proteins and Carbohydrates
07	Polyolefins: Catalyst Design and Structure-Performance
09	Green Chemistry: Renewable Resources and Environmentally Benign Processes for Atom Efficiency
14	EXAM TWO
16	Biomacromolecules
20-26	Enjoy Thanksgiving Break
28	Segmented Block Copolymers: Polyurethanes (Guest Lecture)
30	Polymers as Reactants: Polymer Modification Reactions
Dec 05	Recent trends in polymer design: Advanced topics
07	Reading Day- Final Exam Review
11	1:05-3:05 PM, Comprehensive Final Exam

Grade Basis

- ✓ Two In-Class Exams (25 % each exam, 50 % total)
- ✓ Assigned Homework/Practical Question Sets/In-class Quizzes (15%)
- ✓ Polymer Awareness In-class 3-Minute Drill (5%)
- ✓ Technical Literature Critique (10%)
- ✓ Comprehensive Final Exam (20%)
 - NOTE: If your two semester exam scores average above 95% (and both exams must be above 85%) and your total grade going into the final exceeds 90%, then the final exam is optional and your final exam score will be the average of your two semester exams.

Tentative Curve for Organic Chem. 4534

A:	90-100
B:	80-89
C:	70-79
D:	60-69
F:	<60

General Information

1. Doing chapter problems is strongly encouraged.
2. Homework will be periodically assigned and collected. (Homework MUST be turned in at the beginning of the class on the due date.) Homework assignments must be stapled - 10% automatically deducted if NOT stapled. Homework grade will be deducted 10% PER DAY after due date. There will be no exceptions for late homework assignments.
3. Unannounced quizzes will be held at the beginning or end of a lecture. Each quiz will be based solely on lecture material from the preceding class or assigned reading.
4. All exams are written, not OpScan format.
5. No make-up exams will be given unless for valid, documented medical emergencies or a death in the immediate family. Oral make-up exams will be by appointment only within three days of the scheduled written exam. Either reason for absence requires an e-mail notification prior to the exam (written notice only).
6. Weekly help sessions will be announced in class on a weekly basis.
7. Corrected exams will be returned within two class periods and briefly reviewed. Any discrepancies on exam grading must be addressed with two subsequent class periods after exams are returned.

"3-Minute Drills"

3-5 minute in-class presentation on a pre-approved topic related to organic polymer chemistry. A single overhead is required.

Teaching Philosophy and Course Objectives

Honor Code

Students are encouraged to share class notes and discuss issues and required reading with each other. The Honor Code at Virginia Tech applies to all written assignments (i.e., tests, quizzes, homework, extra credits, etc.). The Virginia Tech Honor Pledge is: "I have neither

given nor received unauthorized assistance on this assignment” and should appear on all written work.

Definitions for cheating, plagiarism, falsification, academic sabotage, and misconduct in research and teaching may be found by selecting the corresponding title found at the University website.

Students are also encouraged to read the Graduate Catalog and the Constitution of the Virginia Tech Graduate Honor System.

Special Needs

If you have any special needs including learning disabilities or athletic obligations, and desire to discuss these with me privately, please set up an appointment within the first two weeks of classes. Any learning disabilities or athletic obligations will require the appropriate university documentation.

Class Website

Consult the blackboard website to routinely obtain announcements, handouts, problem solutions, up-to-date grades, on-line assignments, and written homework assignments.

Instructor

Dr. Tim Long

Department of Chemistry

2108 Hahn Hall

Help Sessions: To be announced in class on a weekly basis

E-mail: telong@vt.edu (Any lecture-oriented questions will be answered at the beginning or end of the next class period or save class questions for help sessions.)

Graduate Teaching Assistants (Chemistry Learning Center)

Chemistry Physics Bldg 3rd Floor Learning Center, 9:00-5:00 most days, consult posted schedule near Center.

If necessary, see me for advice on getting in touch with a one-on-one graduate student tutor.

Polymer Awareness 3-Minute Drills (In-class) Sign-up Sheet

No make-ups are permitted and you must complete on your assigned day. You may either present as a two-person team or individually. Only two total people (one two-person team or two individuals) scheduled per day. You are encouraged to use PowerPoint slides only (projector in Davidson 308 and Prof. Long's laptop).

<u>Date</u>	<u>Names</u>	
Sept 05	_____	_____
07	_____	_____
14	_____	_____
19	_____	_____
21	_____	_____
26	_____	_____
28	_____	_____
Oct 05	_____	_____
10	_____	_____
12	_____	_____
17	_____	_____
19	_____	_____
24	_____	_____
26	_____	_____
31	_____	_____
Nov 02	_____	_____
07	_____	_____
09	_____	_____
16	_____	_____
30	_____	_____
Dec 05	_____	_____

(Total spots for 42 students)