

**Chem 244: Chemical and Spectroscopic Analysis of Organic Compounds**  
**Southwestern College Spring 2006 syllabus**

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**Office Hours:** MWF 9-10 a.m., Th 1:30-3:30 p.m. (MESA) M 11-12 p.m., 2-3 p.m., T 4-5 p.m.

**Lectures:** NA  
**Laboratory:** TTh 8-11:50 a.m. Room 333

**Pre-requisites:**

Chem 242 or equivalent. Concurrent enrollment in Chem 242 is acceptable.

**Course Description:**

This single semester, 2 unit course consists of 6 hours of laboratory work per week with emphasis on chemical and spectroscopic techniques of identification of organic compounds. The course will cover the general topics listed below:

- Classical methods of qualitative analysis:* physical properties, elemental analysis, solubility, functional group classification tests, derivative formation.
- Separation of mixtures:* extraction, liquid and gas chromatography.
- Spectroscopic methods of qualitative analysis:* infrared spectroscopy, low resolution mass spectroscopy, nuclear magnetic resonance spectroscopy
- Advanced techniques:*

**Course Objectives:**

Students will be expected to be able to identify simple organic compounds using chemical reactions and/or spectroscopic methods. For a copy of the complete official course description and objectives, inquire at the office for the School of Mathematics, Science and Engineering or go to:

<http://www.swccd.edu/%7Emse/Ex1/Pdfs/Chem%20200%20F03.pdf>

**Required Materials:**

*The Systematic Identification of Organic Compounds* 8<sup>th</sup> ed.,  
Shriner, Hermann, Morrill, Curtin, Fuson  
*Organic Laboratory Techniques*, 3<sup>rd</sup> ed., Fesseden,  
Fesseden, Feist  
Laboratory notebook  
approved eye protection

**Recommended Materials:**

Towel  
Soap  
Lab coat  
access to online materials  
matches

**Grades:**

The semester grade will be determined by the percentage of the possible points actually earned on reports. Progress reports will be given before each drop date. Additional progress reports can be obtained upon request. All graded assignments MUST show complete work. No credit will be awarded for assignments containing answers only.

Letter grades will be assigned as follows: A ( $\geq 90\%$ ), B ( $\geq 80\%$ ), C ( $\geq 70\%$ ), D ( $\geq 60\%$ ), F ( $< 60\%$ )

Unknowns A and B (Monofunctional groups)	15 pts
Unknown C (Polyfunctional groups)	15 pts
Unknowns D and E (mixture)	20 pts
Unknown F	15 pts
Unknown G	15 pts
Unknown H – oral presentation	20 pts
<b>Total</b>	<b>100 pts</b>

**Re-grades:**

Any paper (exam, quiz, homework or laboratory, etc.) submitted for re-grading may be subject to a complete re-grade.

**Make-ups:**

There will be no make-ups of experiments, quizzes or exams.

**Laboratory:**

All safety regulations are strictly enforced in the laboratory. Violation of these regulations will constitute grounds for removal from the class. SAFETY GLASSES AND CLOSED-TOED SHOES MUST BE WORN AT ALL TIMES IN THE LAB. EATING OR DRINKING DURING LAB IS PROHIBITED. Students must come to class on time, equipped, and prepared. Experimental data must be written **directly on laboratory notebooks**. Failure to do so will result in a score of zero for the assignment. Reports must be received by the beginning of class no more than one week after the conclusion of the lab work in order to receive full credit. Late work will be penalized 2 pts per day after the due date. Failure to maintain laboratory cleanliness will result in a 2 pt deduction from the laboratory grade for each infraction.

**Attendance:**

Students must be in attendance within the first 15 minutes of class during the first week to ensure enrollment unless prior arrangements are made with the instructor. Students may be dropped from the course if absences exceed the number of hours of lecture in a week or two lab meetings. Tardiness may result in exclusion from the class.

**Disabilities:**

Any relevant disability or health-related concern must be brought immediately to the instructor's attention.

**Adds/Drops:**

Last day to add is 1/28. Last day to drop is 2/10. Last day to withdraw is 4/7. Although a student may be dropped by the instructor due to class absence, it is the student's responsibility to properly withdraw from the course. Failure to do so may result in a failing grade.

**Academic Integrity:**

Academic dishonesty in any form will result in an assignment grade of zero. At the instructor's discretion, offenders may receive a failing course grade and be reported to the dean of students. This includes plagiarism in any form, and contact with any unauthorized materials/individuals during the administration of examinations and quizzes.

**Discipline:**

Anyone engaged in behavior deemed by the instructor to hinder either the teaching or learning processes will receive a warning. Failure to heed such a warning may result in that person's removal from the classroom. This includes but is not limited to the ringing of cell phones, text messaging, and interrupting either the instructor or other students.

**NOTE:**

The instructors reserve the right to make modifications to this syllabus and the tentative class schedule as deemed beneficial to student learning.

## Tentative Class Schedule

## Chem 244 (Khuong)

Spring 2006

Week Number	Date	Lectures (Chapters)	Lab (Assignments)
1	Jan --/19	2	-- check-in/course introduction/lab reports/quizzes/exams
2	Jan 24/26	3 5	Known compounds Known compounds
3	Jan 31/Feb 2	9 10	Unknowns A and B: identification Unknowns A and B: identification
4	Feb 7/9		Unknowns A and B: identification Unknowns A and B: identification
5	Feb 14/16	9 10	Unknown C – polyfunctionalized: identification Unknown C – polyfunctionalized: identification
6	Feb 21/23	4	Unknown C – polyfunctionalized: identification Unknown C – polyfunctionalized: identification
7	Feb 28/Mar 2		Unknown D and E: separation Unknown D and E: separation
8	Mar 7/9		Unknown D and E: separation Unknown D and E: identification
9	Mar 14/16		Unknown D and E: identification Unknown D and E: identification
10	Mar 21/23	6/7/8	introduction to spectroscopic analytical methods problem solving
11	Mar 28/30		use of analytical instrumentation spectroscopic analysis of known compounds
12	Apr 4/6 Break Apr 8-16		Unknown F: identification Unknown F: identification
13	Apr 18/20		Unknown F: identification Unknown G: identification
14	Apr 25/27		Unknown G: identification Unknown G: identification
15	May 2/4		Unknown G: identification Unknown H: identification
16	May 9/11		Unknown H: identification Unknown H: identification
17	May 16/18		Unknown H: identification check-out/presentation