

CHEMISTRY 260 (01, 02)

ORGANIC CHEMISTRY I

Summer 2006 / Session A / May 30 – June 30

10:00 - 11:45 AM MTuWTh – Morrill Hall 10 (MO 10)

Olivier J.-C. Nicaise, Ph.D., Professor of Potions and Elixirs

Office: 327 Jennings Hall Laboratories: 329 & 325 Jennings Hall

Phone: (203) 392-6271 Home: (203) 230-8466 E-mail: nicaiseo1@southernct.edu

COURSE DESCRIPTION

You are here to learn the subtle science and exact art of potion- and elixir-making (a.k.a. organic chemistry). In that perspective, **CHEMISTRY 260** is the first of a two-part Introductory Organic Chemistry lecture & laboratory course that focuses on the study of the chemistry of carbon-containing compounds. We will investigate the underlying physical principles of the reactions of these compounds. There will be a special emphasis on bonding theory, acid-base principles, the functional groups, stereochemistry, reaction mechanisms, and the development of synthetic schemes. As there is little foolish wand-waving here, many of you will hardly believe this is magic; but it is!

The laboratory component of this course will include the development of techniques that are important to the organic chemist toward the preparation, isolation, purification, and analysis of the products of organic reactions. **Spectroscopy**, a means to gather information about the structure of molecules by making physical measurements on compounds, will also be studied in the context of the laboratory.

It is expected that everyone enrolled in this course has a working understanding of the material covered in CHE 120 & CHE 121, or the equivalent.

REQUIRED SUPPLIES

- *Organic Chemistry: Structure and Reactivity*, Fifth Edition, Houghton Mifflin Company, 2004; by Seyhan N. EGE.
- *Study Guide for Organic Chemistry: Structure and Reactivity*, Fifth Edition, Houghton Mifflin Company, 2004; by Seyhan N. EGE, Roberta W. KLEINMAN, and Peggy ZITEK.
- Molecular Models.

Remember, it's Summer Organic! We meet 8 hours a week in the classroom!

- **REVIEW the material after each lecture.**

Remember, it's Summer Organic! It goes fast, very fast! So, don't fall behind!

CHEMISTRY 260 FORMAT

- **Hourly Exams.** *450 Points (~52% of Total Points)*

THREE (3) hourly exams will be administered, and each **hourly exam** will be worth *150 Points*. Also, **each hourly exam** will contain some problems chosen from the list of "Strongly Suggested Problems" (SSP) to do given in class, and taken from our textbook. The **THREE (3) hourly exams** will be administered during **THURSDAY** class time according to the schedule indicated below.

Exam #1 THURSDAY, June 8, 2006

Exam #2 THURSDAY, June 15, 2006

Exam #3 THURSDAY, June 22, 2006

Hourly Exams MUST be taken at the indicated time. As a rule, **MAKE-UP EXAMS WILL NOT BE GIVEN**; anyway, it's Summer Organic, there is NO time for Make-Up Exams! And I mean it! However, if you know in advance that you will not be able to sit for an exam –you better have a rock-solid reason!–, **PLEASE SEE ME** as soon as possible.

Exam papers will be returned during **MONDAY** lecture time, and any **request for a re-grade** will have to be made **within a 48-HOUR period following the return date.**

- **Non-Cumulative Final Exam.** *200 Points (~23% of Total Points)*

The **Final Exam** will be worth a total of *200 Points* and will not be cumulative. It will be the equivalent of a **fourth (4th) Hourly Exam**, and it will be administered **during the regularly scheduled last day of school of Summer 2006 / Session A.**

FRIDAY, JUNE 30, 2006: 10:00 AM – 12 NOON

- **Laboratory.** *210 Points (~25% of Total Points)*

Laboratory sessions are discussed in more detail in a separate **laboratory syllabus** (CHE 260L).

The lab points will be distributed on the basis of the following criteria:

- Laboratory Reports.

There will be five (5) laboratory reports for a total of five (5) laboratory experiments (wet labs).

The laboratory reports will count for 48% of the lab points.

– Post-Laboratory Question Sheets.

There will be six (6) post-laboratory question sheets for a total of five (5) laboratory experiments (wet labs).

The post-laboratory question sheets will count for 14% of the lab points.

– Spectroscopy Worksheet.

There will be one (1) spectroscopy worksheet for a total of three (3) laboratory experiments (dry labs).

The worksheet will be distributed on the week of **June 12, 2006**, and will be due **NO LATER THAN June 30, 2006, 5:00PM.**

The spectroscopy worksheet will count for 29% of the lab points.

– Laboratory Notebooks.

Laboratory notebooks will be collected on the **last week of laboratory** (week of **June 26, 2006**), and can be turned in, **AT THE VERY LATEST**, on the last day of lecture, *i.e.*, **June 29, 2006**. You may receive up to a total of 9% of the lab points. They will be returned to you on the first day of class in CHEMISTRY 261, *i.e.*, July 3, 2006; otherwise, please stop by my office (JE 327), and pick them up.

IMPORTANT REMARK, PLEASE TAKE NOTE:

SCSU Chemistry Department policy requires that students taking courses which include lecture AND laboratory **MUST PASS THE LABORATORY** in that course in order to **PASS THE COURSE**, regardless of the average grade received in lecture.

A **passing grade** for the **LABORATORY** in that course requires that you achieve **AT LEAST 60% of the lab points** in that course, that is to say **a minimum of 126 Points** in the present case (CHE 260); a piece of cake, believe me!

• **Grading Policy.**

Cut-offs for exams and the course as a whole will be **in the vicinity of:**

A ⁺	≥95%	A	≥90%	A ⁻	≥85%	B ⁺	≥78%
B	≥73%	B ⁻	≥68%	C ⁺	≥61%	C	≥56%
C ⁻	≥51%	D ⁺	≥44%	D	≥39%	D ⁻	≥34%
		F	<34%				

In other words, if you are targeting an **A** in this course, you will need to achieve at least $0.90 \times (450 + 200 + 210 = 860) = 774$ **Points** of the **860 Total Points** available in this course; got it??? GREAT!!!

ACADEMIC IMPROPRIETY

This polished euphemism needs to be brought up. 'Cheating' (and I hate to use this term, especially at this august institution) of any kind will not be tolerated, because it degrades the principle of meritocracy. Specific application to this course will largely cover the taking of exams and submission of exams for re-grading.

Verifiable improprieties while taking an exam (such as using unauthorized notes, or blatant examples of 'information exchange') will result in your receiving a mark of zero for that exam. The same holds true for submitting a forged or tampered exam for re-grading. Your graded exams may be photocopied for purposes of verification prior to being returned to you.

*A second incidence will result in your receiving a failing grade for the course, and the episode brought to the attention of a Dean of the College (this is **not** good).*

Further information and specific policies regarding academic impropriety at the University may be found in the *Student Handbook* and other University publications.

STUDENTS WITH DISABILITIES

Students with disabilities who believe that they may need accommodations in this class are asked to contact the Disability Resource Center, located in Engleman Hall C-105A (EN C-105A), at (203) 392-6828 or (203) 392-6131 **as soon as possible** to better ensure that such accommodations are implemented in a timely fashion.

However, if you would like to speak with me about accommodations, or other concerns, such as emergency medical information, or arrangements in case the building must be evacuated, please make an appointment **as soon as possible**. My office location is in Jennings Hall, room 327.

LECTURE OUTLINE

The following is a detailed outline of the material that we will **attempt** to cover this Summer / Session A in lecture.

Introduction

- A. Line-Angle Drawings **5.9; Handout**
(or Line Structures, or Skeletal Structural Formulas)
- B. The Functional Groups **p. 40; Handout**

Unit #1: STRUCTURE & BONDING, PART I

- A. An Introduction to Structure and Bonding in Organic Compounds **1 (except 1.6)**
- B. Covalent Bonding and Chemical Reactivity **2**

Unit #2: AN INTRODUCTION TO ORGANIC CHEMICAL REACTIVITY

- A. Reactions of Organic Compounds as Acids and Bases **3; 1.6; 16.1; 16.2; 16.3; 16.4**
- B. Reaction Pathways **4**

Unit #3: STRUCTURE & BONDING, PART II

- A. Alkanes and Cycloalkanes **5; 19.1; 19.4**
- B. Stereochemistry **6**

Unit # 4: KEY REACTIONS AND MECHANISTIC THINKING

- A. Nucleophilic Substitution and Elimination Reactions **7**

Unit #5: FUNCTIONAL GROUPS AS A BASIS FOR STUDYING REACTIONS AND SYNTHESIS

- A. Alkenes **8; 25.6; 19.2; 19.3; 19.5**
- B. Alkynes **9**

LABORATORY OUTLINE

The primary focus of **CHE 260 lab** (CHE 260L) is on the development of techniques that are important to the organic chemist toward the preparation, isolation, purification, and analysis of the products of organic reactions.

If you know in advance that you will not be able to come to your laboratory session, **PLEASE SEE ME as soon as possible**. Non-reported absences occasioned by illness or other legitimate reasons are excused by a memo from a physician or a Dean; non-reported unexcused absences will result in a zero.

The lab schedule is as follows:

Day of . . .	Experiment
May 30th	HELLO! GENERAL COMMENTS, SAFETY, & CHECK-IN #1 – Recrystallization & Melting Point Determination
June 1st	#2/Part I – MACROscale Fractional Distillation
June 6th	#2/Part II – Gas Chromatography (GC)
June 8th	#3 – MICRO- and MACROscale Liquid-Liquid Extraction
June 13th	Spectroscopy Lecture: NMR (Chap. 11)
June 15th	#4 – Thin-Layer Chromatography (TLC)
June 20th	Spectroscopy Lecture: UV-Vis (Chap. 12: 12.1) & IR (Chap. 12: 12.2)
June 22nd	Spectroscopy Lecture: IR (Chap. 12: 12.2) & MS (Chap. 12: 12.3)
June 27th	#5 – Separation by Gas Chromatography (GC)
June 29th	CHECK-OUT; GOODBYE! HAPPY 4th of JULY!

SEE YOU NEXT WEEK!

AND LAST, BUT NOT LEAST

CELLULAR PHONES

All cellular phones and pagers and beepers and other devices of this type are **STRICTLY FORBIDDEN** in the lecture classroom (MO 10) and in the teaching laboratory (JE 325), ...unless **TURNED OFF** and **KEPT AWAY**.

Under **NO** circumstances are telephones to be answered or used to make a call in the classroom or laboratory.

Students who ignore this policy will be asked to leave the classroom or laboratory **PROMPTLY**, and will receive a grade of **ZERO** for **ALL** evaluations to be carried out during that time.

If you are on call for work related emergencies or personal reasons, switch all devices to a mode that will not disturb the class or laboratory (*i.e.*, vibrate mode), and inform the instructor prior to class.

There will be a **ZERO** tolerance in this course with regard to the use of telecommunication devices, and the rules stated above will be **STRICTLY ENFORCED**.