

CHEM 6371 – Spectroscopic Identification of Organic Compounds
CHEM 4341 – Applied Spectroscopy

Class 11:05 am - 11:55 am Mon., Wed. and Friday
 CHem Annex Rm 17, Aug 21, 2006 - Dec 16,
 2007 Lecture - Arthur J. Ragauskas

INSTRUCTORS

Dr. Art. J. Ragauskas (AJR) IPST@GT, RM 578 Rm 578, 404-894-9701 arthur.ragauskas@ipst.gatech.edu	Dr. Leslie Gelbaum (LG) Boggs B-98 404-894-4079 lg2@prism.gatech.edu	Dr. Cameron Sullards (CS) IBB 0502 404-385-4249 cameron.sullards@chemistry.gatech.edu
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Office Hours:

AJR: Monday/Friday 3:00 – 5:30 pm
 CS: Wednesday/Thursday 1:00 – 2:30 pm
 LG: Tuesdays and Thursdays 1-3 pm

REQUIRED TEXTBOOK

"Spectrometric Identification of Organic Compounds", 7th edition, by Robert M. Silverstein; Francis X. Webster; David J. Kiemle Published by John Wiley & Sons, Inc. (Available at the Georgia Tech bookstore)

MOLECULAR MODEL KITS

Many students find model kits useful when studying organic chemistry/spectroscopy. You do not need an expensive kit. A small selection of atoms and bonds is useful.

ORGANIC CHEMISTRY – II

Date	Lecture	Topic, (Reading Assignment from Course Textbook)	Lecturer
Topic 1: Infrared Spectroscopy			
20-Aug M	1	Course Introduction/FT-IR	AJR
22-Aug W	2	FT-IR Theory/Instrumentation/Sample Handling (Chapter 2)	AJR
24-Aug F	3	IR Interpretation of Spectra: Organic Molecules (Chapter 2)	AJR
27-Aug M	4	IR Interpretation of Spectra: Organic Molecules (Chapter 2)	AJR
29-Aug W	5	IR Interpretation of Spectra: Organic Molecules (Chapter 2)	AJR
31-Aug F	6	IR Interpretation of Spectra: Organic Molecules (Chapter 2)	AJR
03 Sept. M		Official School Holiday	
05 Sept. W	7	Review: IR Interpretation of Spectra: Organic Molecules (Chapter 2)	AJR
07 Sept. F	8	Exam 1: Infrared Spectroscopy	AJR

Topic 2: Mass Spectrometry			
10 Sept M	9	Introduction & Fundamentals of Mass Spectrometry (Chapter 1):	CS/AJR
12 Sept W	10	Mass Spectrometry (Chapter 1)	CS/AJR
14 Sept F	11	Mass Spectrometry (Chapter 1)	CS/AJR
17 Sept M	12	Mass Spectrometry (Chapter 1)	CS/AJR
19 Sept W	13	Mass Spectrometry (Chapter 1)	CS/AJR
21 Sept F	14	Mass Spectrometry (Chapter 1)	
24 Sept M	15	Exam 2: Mass Spectrometry	CS/AJR
Topic 3: NMR Spectrometry			
26 Sept W	16	Fundamentals of NMR Spectrometry	LG/AJR
28 Sept F	17	Fundamentals of NMR Spectrometry	LG/AJR
01 Oct M	18	^1H NMR Spectrometry (Chapter 3)	AJR
03 Oct W	19	^1H NMR Spectrometry (Chapter 3)	AJR
05 Oct F	20	^1H NMR Spectrometry (Chapter 3)	AJR
08 Oct M	21	^1H NMR Spectrometry (Chapter 3)	AJR
10 Oct W	22	^1H NMR Spectrometry (Chapter 3)	AJR
12 Oct F	23	^1H NMR Spectrometry (Chapter 3)	AJR
15 Oct M		Student Recess	
17 Oct W	24	Exam 3: Fundamentals of NMR and ^1H NMR Spectrometry	AJR
19 Oct F	25	^{13}C NMR Spectrometry (Chapter 4)	AJR
22 Oct M	26	^{13}C NMR Spectrometry (Chapter 4)	AJR
24 Oct W	27	^{13}C NMR Spectrometry (Chapter 4)	AJR
26 Oct F	28	^{13}C NMR Spectrometry (Chapter 4)	AJR
29 Oct M	29	^{13}C NMR Spectrometry (Chapter 4)	AJR
31 Oct W	30	Exam 4: ^{13}C NMR Spectrometry	AJR
02 Nov F	31	Introduction to Correlation NMR Spectrometry (Chapter 5)	LG/AJR
05 Nov M	32	Introduction to Correlation NMR Spectrometry (Chapter 5)	LG/AJR
07 Nov W	33	Introduction to Correlation NMR Spectrometry (Chapter 5)	LG/AJR
09 Nov F	34	Applications of Correlation NMR Spectrometry (Chapter 5)	AJR
12 Nov M	35	Applications of Correlation NMR Spectrometry (Chapter 5)	AJR
14 Nov W	36	Applications of Correlation NMR Spectrometry (Chapter 5)	AJR
16 Nov F	37	Applications of Correlation NMR Spectrometry (Chapter 5)	AJR
19 Nov M	38	Exam 5: Correlation NMR	AJR
21 Nov W	39	Problem Solving (Chapter 7) and Homework Assignment	AJR
23 Nov F		Official School Holiday	
26 Nov M	40	Problem Solving (Chapter 7)	AJR
28 Nov W	41	Problem Solving (Chapter 7) - Literature Examples	AJR
30 Nov F	42	Problem Solving (Chapter 7) - Literature Examples	AJR
03 Dec F	43	Beyond $^1\text{H}/^{13}\text{C}$ Nuclear NMR (Chapter 6)	AJR
05 Dec F	44	Beyond $^1\text{H}/^{13}\text{C}$ Nuclear NMR & Homework Assignment Due (Chapter 6)	AJR
07 Dec F	45	Beyond $^1\text{H}/^{13}\text{C}$ Nuclear NMR (Chapter 6)	AJR
FINALS WEEK (DEC 10-14)			
			AJR

POLICIES, PROCEDURES AND GRADES**GRADES**

	Date	Topic
Exam 1	Sept 8	Topic: Infrared Spectroscopy
Exam 2	Sept 24	Topic: Mass Spectrometry
Exam 3	Oct 17	Topic: Fundamentals of NMR and ^1H NMR Spectrometry
Exam 4	Oct 31	Topic: ^{13}C NMR Spectrometry
Exam 5	Nov 19	Topic: Correlation NMR
Homework	Dec 5	Comprehensive
Final	Finals week	Comprehensive

The final grade will consist of the four highest grades of the five exams given in class (60%) (i.e., Exams 1 -5; each of equal value), grade acquired from the homework assignment (10%) and a final exam contributing to 30% of the final grade.

Over All Grade Assignment: 90% or higher guarantees an "A"; 80 - 89% guarantees a "B"; 70 -79 % guarantees a "C"; 60 - 69% guarantees a "D"; < 60% assures a F

THE FINAL IS REQUIRED**LECTURE ATTENDANCE**

It is strongly recommended that you attend all lectures.

STUDENT ID NUMBERS

All work submitted for grading must include your name *and class roll number* (not SSN).

REGRADES

If you want any work regraded you must make a written request and return the assignment within one week to the instructor who is teaching the section. Work will not be regraded after this deadline.

HOMEWORK***Written Homework (10% of final grade)***

A written homework set will be assigned worth 10% of the final grade. Answers must be submitted on the answer sheet provided using MSWord, ChemDraw or an equivalent molecular draw computer program.

Handwritten answers will not be accepted. *Late answers will not be accepted unless pre-arranged with the lecturer.*

Other Problems (not graded)

You should work the problems in each reading assignment as you get to them by the instructor. These will serve as a guide for the types of questions to appear on examinations. Do not submit answers to these problems, they will not be graded.

EXAMS: SCHEDULE, MAKE-UPS AND DROPS

You must take the exam at the assigned time. All exams are closed to textbooks, class-notes and electronic devices (unless otherwise stated prior to the exam). Tables of NMR, IR, MS data are allowed (What is NOT allowed are Written Text, spectral data, and Schemes). For an example of what **is** allowed, please see pages 50, 124, 125, 195, 201, 243 of "Spectrometric Identification of Organic Compounds", 7th edition, by Robert M. Silverstein; Francis X. Webster; David J. Kiemle. For an example of what is **NOT** allowed, please see pages 31, 79, 87, 95, 155, 258, and 274 of "Spectrometric Identification of Organic Compounds", 7th edition, by Robert M. Silverstein; Francis X. Webster; David J. Kiemle. If any uncertainty exists in regards as to what can be brought into an exam the student is required to review this issue with the class professor prior to the day of the exam.

The only valid reasons for missing an exam are illness and official GA Tech business. Make-ups can only be given if advance notification is given or upon presentation of a doctor's note. All make-up exams must be administered before the exams are returned to the class. Exams not made-up by this time, for any reason, will receive a score of zero and will be the drop grade for the class (i.e., it will become the lowest score from Exam 1, 2, 3, 4, or 5). If an exam is missed for any reason, that score (zero) will be dropped.

RETURNED WORK

All graded assignments will be returned as soon as possible, usually within a week. Work not picked up in lecture will be available from outside of the instructor's office door.

TEACHING COURSE FORMAT:

The course is taught in a seminar style by the professor and students. Literature articles will be assigned for reading and will be reviewed at class meetings. Students will be assigned course topics for which they will research the literature and present their findings to the class

MATERIAL COVERED/STUDENT RESPONSIBILITIES

You are responsible for all material presented in lectures and in assigned readings. You are also responsible for announcements made in class, which will also be posted on the course web page or distributed by email. You must check the web site and your *prism.gatech.edu* email account on a regular basis. Note: there are potential problems associated with automatic forwarding of messages from *prism* to other email addresses; check your *prism* account even if you have it set up to forward email elsewhere.

WORKING IN GROUPS

Most learning takes place *outside* of the classroom. Although lectures should put things in perspective, working through the textbook, and solving the problems is when you will come to terms with the material. We encourage you to work together on these reading and problem assignments. For most students, it is actually unwise to try to work alone. Although you might study in groups, remember that you are ultimately responsible for your learning. Everybody can benefit from team work. If you are struggling with the material you stand to learn a lot; if you are an "Spectroscopic Whiz" you also stand to learn from the challenge of presenting your understanding to others. You will learn through teaching.

Office hours are available for individual instruction. No *new* information will be introduced during office hours or problem solving sessions. Come prepared to ask *and answer* problems.

COMPETITION AND GRADING

Formal education often puts students in competition with each other for good grades. We do not believe that competition for grades, and the exclusion of everything else, is the most effective way to foster student development. Although grades will be assigned based on a numerical score which judges attainment on exams/homework. We hope that the course is structured such that if you show a desire to learn, put *the effort in, and have the intellectual ability, you can get the grade you want.*

"WORD – Past Tests/Exams"

If you want word just ask! The *processes* by which you can solve the problems will be *exactly* the same as those in the book. Occasionally, an exam question will be taken directly from the text.

CANCELLATION OF CLASSES

If class is cancelled by Georgia Institute of Technology owing to campus closing, the entire schedule for the course will be delayed by one lecture. This will move all exams and the homework due dates back by one lecture.

TIME COMMITMENTS

We all have extensive demands on our time. For each lecture you should aim to put in *at least* another two hours of your own time. You will need to spend more time preparing for exams. Some students will require more, some less.

SOME STUDY TIPS

Understand and Rationalize. Read the text, prepare your own summaries. Study in groups. ***Keep up to date! Ask Questions!!***

STUDENT CLASS ACCOMMODATIONS

Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements are encouraged to register with ADAPTS-Disability Services Program at (404)894-2564 or www.adapts.gatech.edu and contact me to discuss access issues.

GEORGIA TECH ACADEMIC HONOR CODE: Please visit www.honor.gatech.edu

When copying any written material use "Quote and attribute any words that are not your own." Do not cut and paste more than 1 % of a paper; any percentage more than this will be considered plagiarism. This includes the use of "word." (With "word" being any material a student may have acquired from a previous semester of this class.) With "word" being any material a student may have acquired from a previous semester of your class. Use of any previous semester course materials is allowed for this course; however, I remind you that while they may serve as examples for you, they are not guidelines for any tests, quizzes, homework, projects, or any other course work that may be assigned during the semester.

For Tests: Cheating off of another person's test or quiz is unethical and unacceptable. Cheating off of anyone else's work is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly. For any questions involving these or any other Academic Honor Code issues, please see me or consult www.honor.gatech.edu.