

UNIVERSITY OF FLORIDA

COURSE SYLLABUS

Chemistry 4230/5235 (Section 11314/11367)

ORGANIC SPECTROSCOPY

Fall 2021

Instructor and Contact Info:

Professor Zhongwu Guo; Office: CCB Room 302D; telephone: 352-392-9133; e-mail: zguo@chem.ufl.edu

Class Time and Location:

Lectures: every M and W (and Nov. 12th, Fri.), period 3 (9:35 – 10:25am); Room: Tur 2319
Problem sessions: every F, period 3 (9:35 – 10:25am); Room: Tur 2319

Office Hours:

M, W, F: 10:30 – 11:20 AM, office hours are f2f at CCB Room 302D, but they are also available on Zoom (Meeting site: <https://ufl.zoom.us/j/96497872277>; Meeting ID: 964 9787 2277).

E-Learning Website:

<https://lss.at.ufl.edu/> (check regularly to find announcements, lecture notes and handouts, exam scores, and other information related to this class). From this webpage, click on the Canvas login button and then use your Gatorlink ID to log in.

Textbooks:

“*Spectrometric Identification of Organic Compounds*” (Robert M. Silverstein, Francis X. Webster, David J. Kiemle, David L. Bryce, Eds), 8th Ed.

Textbook Buying Options:

In addition to the UF bookstore and usual on-line booksellers to purchase, see also <https://ares.uflib.ufl.edu/> for a list of books that are available for two-hour check-out at the Marston Science Library. There is a link to Ares on the course e-Learning site as well.

Prerequisites:

One year of organic chemistry (CHM 2210/2211) is necessary.

Course Objectives:

After this course, all students are expected to master the advanced knowledge and skills to make structural assignments and characterization of organic compounds using various modern spectroscopic technologies, especially MS, IR, and 1D and 2D NMR technologies.

Reading and Homework Assignments:

Reading assignments are based on the above textbook. For lecture topics not covered therein, students are responsible only for the contents in the lectures; however, in case of questions or for any other information, students are encouraged to consult the cited references.

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Selected problems as homework will be assigned for chapters 1-6 of the Silverstein textbook with the due dates listed in this document. No assignments will be accepted late, except when there are certified medical reasons. Because answers to the problems are accompanied with the textbook materials, the assignments will not be graded or corrected, but you will **receive 6 bonus points for each completed assignment turned in**. You are strongly encouraged to try each problem without consulting the solution before checking your answer against the one given (please be careful as there are a number of typos with some of the answers). Make sure that you understand the correct answers and master the skills to solve problems. You can earn **a maximum of 30 points** toward your final grade by handing in your completed assignments.

Conduct in the Classroom:

All students are expected to be punctual in their attendance at lectures. If you are a few minutes late for a class, please sit in a seat that does not require you to climb over numerous other students. ***You are expected to be on time for all exams, and extra time will NOT be allocated to any student who arrives late.*** You are expected to be considerate toward your fellow students; it is requested that you do not hold conversations during the class. Any student who persists in talking during lectures will be asked to leave the room. Please **turn off cell phones before entering the lecture hall**, or you will be asked to leave the room.

Examinations and Grading Policies:

There are two (2) in-classroom 50-min exams (100 pts each) and one final exam (200 pts). Tentative dates of the 50-min exams are: ***Sept. 27th*** and ***Nov. 10th***. The final exam should be on ***Dec. 16th*** from 3:00 to 5:00 PM in the classroom (Tur 2319), except for potential changes made by the registrar's office.

There is no makeup exam for this class. If a student has to miss a 50-min exam, he/she must submit a valid reason (of emergency) that will need to be verified and approved by the instructor. Under this condition, the missed 50-min exam will be replaced by 50% of his/her final exam. No student will be allowed for missing the final exam, ***and*** no student will be allowed for missing both in-class exams. In the event that you have valid reasons ***and*** have gotten permission from the dean of graduate or undergraduate studies for missing the final exam or missing both in-class exams, you will obtain an "I" grade, and you will need to take the missed exams with the class next year to obtain your final letter grade to replace the "I" grade.

Letter grades will be assigned based upon the scores of ***three exams*** and ***bonus points*** that you have earned from the homework assignments. According to the instructor's experience, it is ***very important*** that you do not fall behind with the homework assignments, because a few points can make a big difference with your final letter grade. There will be a curve for CHM 4230 students (2 credit class) but not for CHM 5235 students.

Letter grade scales:

- A $\geq 90\%$;**
- A⁻ $< 90\%$ but $\geq 85\%$;**
- B⁺ $< 85\%$ but $\geq 80\%$;**
- B $< 80\%$ but $\geq 75\%$;**
- B⁻ $< 75\%$ but $\geq 70\%$;**
- C⁺ $< 70\%$ but $\geq 65\%$;**
- C $< 65\%$ but $\geq 60\%$;**
- C⁻ $< 60\%$ but $\geq 55\%$;**
- D $54.99-40\%$;**
- E $< 40\%$.**

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Class Schedules (tentative, subject to changes as Dr. Guo sees necessary):

We have lectures on every Mon. and Wed. (and on a Fri., Nov., 12th) and a problem session on every Fri. in the assigned classroom. The problem session is required for CHM 5235 students. **CHM 4230 students are highly encouraged to attend the problem sessions**, as this should be very helpful for you, or you will be at a disadvantageous position.

Syllabus and Chapter 1. Mass Spectrometry

5 lectures

Aug. 23, 25, 30, Sept. 1, 8

Problem sessions

Aug. 27, Sept. 3, 10

Homework #1 due date: Sept. 13

(Note: No class on Sept. 6 - holiday)

Chapter 2. Infrared Spectrometry

4 lectures

Sept. 13, 15, 20, 22

Problem sessions

Sept. 17, 24, Oct. 1

Homework #2 due date: Oct. 4

(Note: No class on Sept. 29 – NIH study section)**Exam #1: Sept. 27** (in classroom, Chapters 1 and 2)

Chapter 3. Proton NMR Spectrometry

7 lectures

Oct. 4, 6, 11, 13, 18, 20, 25

Problem sessions

Oct. 15, 22, 29

Homework #3 due date: Nov. 1

**(Note: No class on Oct. 8 – UF homecoming day;
no class on Oct. 27 – lecture at other university)**

Chapter 4. Carbon-13 NMR Spectrometry

3 lectures

Nov. 1, 3, 8

Problem sessions

Nov. 5

Homework #4 due date: Nov. 12

Exam #2: Nov. 10 (in classroom, Chapters 3 and 4)

Chapter 5. Correlation NMR Spectrometry

5 lectures

Nov. 12, 15, 17, 22, 29

Problem sessions

Nov. 19

**(Note: A lecture will be given on Nov. 12 to
make up for Oct. 27 — all students need to
attend; no class on Nov. 24 & 26 – holidays)**

Chapter 6. NMR Spectrometry of Other Atoms

1 lecture

Dec. 1

Problem sessions

Dec. 3

Chapter 7. Problem Solving Using All Techniques

2 lecture

Dec. 6,8

Homework #5 due date: Dec. 8

Final Exam: Dec. 16, 3:00-5:00 PM, Room Tur 2319 (subject to change per registrar's office)

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Homework Assignments:

- #1: Chapter 1: Problems 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 1.11
#2: Chapter 2: Problems 2.2, 2.3, 2.5, 2.8, 2.9
#3: Chapter 3: Problems 3.1, 3.2, 3.3, 3.4, 3.8, 3.10
#4: Chapter 4: Problems 4.1, 4.2, 4.3, 4.4, 4.7
#5: Chapter 5: Problems 5.1, 5.2, 5.5, 5.7, 5.9, 5.11, 5.12
Chapter 6: Problems 6.1, 6.2, 6.3, 6.4

Other Important Information:

- **Disability Resources:** Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.
- Division of Student Affairs (Counseling, Dean of Students Office): <http://www.ufsa.ufl.edu/>.
- UF Grades and Grading Policies: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.
- Lose or find something during class? Visit the Chemistry lost-and-found (Leigh Hall 218).
- Need help dropping this class? Contact a Chemistry undergraduate advisor here: <https://www.chem.ufl.edu/undergraduate/academic-advisors/>.
- **Student well-being:** Your well-being is important to the University of Florida. The U Matter, We Care initiative (<http://www.umatter.ufl.edu/>) is committed to creating a culture of care on the UF campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.
- **Online course evaluation:** Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of the course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Copyright Notice:

All handouts used in this course are copyrighted and may not be copied without Dr. Guo's expressly granted permission. "Handouts" include all materials generated for this class. Only students currently enrolled in the class may make a single copy of this material for their personal use.

Minus Grades:

Used if appropriate. UF policy requires the following URL be listed:
<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

UNIVERSITY OF FLORIDA**Student Honor Code:**

The UF Student Honor Code (see <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/> for details): We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” Honor Code violations include copying on an exam (or helping another student to copy) and/or turning in an exam for regrading that has been changed since it was graded by the instructor.

Any student found responsible for an academic honesty violation in this course will be recommended sanctions consistent with the offense.

Classroom Behavior Expectations for COVID-19:

We will have face-to-face instructional sessions to accomplish the learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- This course has been assigned a physical classroom with enough capacity to maintain enough physical distances among individuals. Please do not move desks or stations and do not wander around in the classroom.
- Hand-sanitizing stations are placed outside of our classroom. Please sanitize your hands before you enter and after your exit the classroom.
- You are encouraged to wear approved face coverings during the classes and within buildings.
- Please wipe your desk down with sanitizing wipes prior to sitting down and at the end of the class.
- Follow your instructor’s guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>), please use the UF Health screening system and follow the instructions on whether you are able to attend class.
- During the office hours, you are encouraged to wear approved face coverings **at all times** and practice physical distancing. Thus, the number of students present at the office will be limited, and students will be addressed on a first-come-first-serve basis. Meetings outside of the office hours are possible but by email appointment only (at least 2 days in advance).