

## UNIVERSITY OF FLORIDA

COURSE SYLLABUS

## Chemistry 4230/5235 (Section 11135/11183)

## ORGANIC SPECTROSCOPY

Fall 2023

Instructor and Contact Info:

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

Class Time and Location:

Lectures: every M and W, period 7 (1:55 – 2:45pm); Room: LEI 207

Problem sessions: every F, period 7 (1:55 – 2:45pm); Room: LEI 207

Office Hours:

Office hours (M and W 3:00–4:00pm) are at SFH Room 302D (or on Zoom at the same time by appointments only; 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 course). 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/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 by textbook materials, the assignments will not be graded or corrected. However, you will **receive 6 bonus points for each completed assignment turned in on time**. You are strongly encouraged to try all problems without consulting solutions before checking your answers against the ones given (please be careful as there are many typos with some of the answers). Make sure that you understand the correct answers and master the skills to solve problems. In total, 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. 27<sup>th</sup>** and **Nov. 6<sup>th</sup>**. The final exam should be on **Dec. 14<sup>th</sup> from 10:00 AM to 12:00 PM** in the classroom (LEI 0207), 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 to miss the final exam, **and** no student will be allowed to miss both in-class exams. If 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 homework assignments, because a few points can make a big difference for your final letter grade. There may be a curve for CHM 4230 students (2 credit class) but not for CHM 5235 students.

***Letter grade scales:***

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

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**Class Schedules (tentative, subject to changes as necessary):**

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

## Introduction and Chapter 1. Mass Spectrometry

5 lectures

Problem sessions

**Homework #1 due date: Sept. 13****(Note: No class on Sept. 4 - holiday)****Aug. 23, 28, 30, Sept. 6, 11****Aug. 25, Sept. 1, 8**

## Chapter 2. Infrared Spectrometry

4 lectures

Problem sessions

**Homework #2 due date: Oct. 2****Sept. 13, 18, 20, 25****Sept. 15, 22****Exam #1: Sept. 27** (in classroom, **Chapters 1 and 2**)

## Chapter 3. Proton NMR Spectrometry

7 lectures

Problem sessions

**Homework #3 due date: Oct. 25****(Note: No class on Oct. 6 – UF homecoming day)****Oct. 2, 4, 9, 11, 16, 18, 23****Sept. 29, Oct. 13, 20**

## Chapter 4. Carbon-13 NMR Spectrometry

3 lectures

Problem sessions

**Homework #4 due date: Nov. 8****Oct. 25, 30, Nov. 1****Oct. 27, Nov. 3****Exam #2: Nov. 6** (in classroom, **Chapters 3 and 4**)

## Chapter 5. Correlation NMR Spectrometry

5 lectures

Problem sessions

**(Note: no class on Nov. 10, 22, and 24 – holidays)****Nov. 8, 13, 15, 20, 27****Nov. 17**

## Chapter 6. NMR Spectrometry of Other Atoms

1 lecture

Problem sessions

**Nov. 29****Dec. 1**

## Chapter 7. Problem Solving Using All Techniques

2 lecture

**Homework #5 due date: Dec. 7****Dec. 4,6**

**Final Exam (cumulative, all chapters): Dec. 14, 10:00 AM-12:00 PM, Room LEI 207** (pending the final decision of the 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/>.
- **Need to drop this course?** You can do so by logging in to ONE.UF and select "After Deadline - Add/Drop Classes" under Registration in the main menu. If you have questions or need help with this process, please reach out to the advising office in your college.
- **Your well-being** is important to UF. 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](mailto: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 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.***

**Information about Recording in Classroom:**

- Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.
- A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.
- Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.