INSTRUCTOR: Prof. David F. Wiemer; Office E531 CB; david-wiemer@uiowa.edu

TEXTBOOK: The book Spectrometric Identification of Organic Compounds, now in its 8th edition, by Silverstein, Webster, Kiemle, and Bryce is recommended. It contains both reference tables of spectral data and some practice problems. Earlier editions also may be helpful (8th Edition, 2014, ISBN-10: 0470616377; 7th Edition, 2005, ISBN 0471393622). It is a useful book for an organic chemist to have within ready access, and it may be used as a reference during our exams (although a comparable text can be used instead). If you would prefer not to buy one, there are multiple copies in the Department and you may be able to borrow one for the exams.

Two other texts that might be useful can be purchased online. One would be Organic Structure Analysis, 2nd Edition (P. Crews, J. Rodriguez, and M. Jaspars, ISBN 9780195336047; 2009). This is more extensive than the Silverstein book, and probably has too much detail for this course. The other would be Structure Determination of Organic Compounds, Tables of Spectral Data. The most recent (4th) edition of this book was published in 2009 and was authored by Pretsch, Bühlmann, and Badertscher (ISBN 3540938095). Earlier editions might also be useful. This book is a compendium of data that provides many examples of spectroscopic data (especially NMR) for various types of compounds. This book does not include practice problems, explanations, or details of theory.

LECTURES: Will be delivered electronically in accord with College of Liberal Arts and Sciences instructions. This course is scheduled for 9:30–10:45 AM on T/Th. Lectures will be delivered over Zoom, with the appropriate links posted at our ICON site.

TECHNOLOGICAL DETAILS: This course is being delivered primarily online. This means that students must be able to access all online components of the course. Tools that will be needed include but are not limited to: a reliable internet connection, a computer/laptop/tablet, the ability to convert work to a pdf and upload documents (either through a writing tablet or through scanning a hand written document with an app (e.g. TurboScan)), webcam and a microphone. Online content for the course will be managed using the ICON system. If students don’t have access to the technology (such as needing to use a webcam for the purpose of completing an online exam), they should contact the Office of the Dean of Students.

Copies of the course notes (essentially the Powerpoint slides used in class) will be provided for download (in pdf format on ICON) periodically as the semester progresses. These will be made available before they are covered in class, so that students may add written comments to them during the lecture and, ideally, look them over before class. There will be additions and deletions made during the semester in an effort to improve their quality. Some slides will have blank spaces to support use of Socratic method during lecture. Not all of the notes will be covered in depth in class: some parts will be considered briefly, while others may simply be assigned as reading or reference material.

WEB SITE: https://icon.uiowa.edu The course syllabus, announcements, suggested problems, and lecture slides will be available on the ICON site. You will be expected to check our ICON site and your uiowa email regularly. All email correspondence must be managed through your uiowa email address.

OFFICE HOURS Formal office hours will be held from 1:30–2:20 PM on T/Th, but will be held on line. Questions also will be taken during class as time permits, immediately after class, or by appointment. E-Mail should be used to make appointments or for very brief questions.
DEPARTMENTAL HOME: The Department of Chemistry

DEPARTMENTAL CONTACT INFORMATION: Leonard MacGillivray, DEO, E331 CB; through Mr. Robert Beland, Administrative Service Coordinator, E331 CB, 335-1350.

CONTENT: This course will cover the most commonly used spectroscopic and spectrometric techniques in organic structure elucidation, with the exception of X-ray crystallography. The vast majority of course time will be spent on NMR (>75%) and MS methods, their practical applications, and interpretation of data generated using these techniques. Exam I will focus on interpretation of standard \( ^1 \text{H} \) and perhaps some \( ^{13} \text{C} \) NMR data. Exam II will build upon earlier work by bringing in more sophisticated NMR techniques (including 2D NMR). The Final Exam will be comprehensive, and will include problems of the types found on Exams I and II, along with coverage of MS and additional topics as time permits.

EXAMINATIONS: For this semester, all exams probably will be given online. All examinations will be closed book, except that a reference work (e.g. Silverstein) may be used. All other materials (e.g. books, notebooks, summary sheets, computers, backpacks, purses, phones, etc.) must be put away before the exam begins. Tests will be of an essay type, where your answers are written in an exam booklet provided.

Three two-hour exams will be scheduled, two mid-semester and one during final exam week.

- After \( ^1 \text{H} \) NMR (an evening ~March 1\textsuperscript{st}, 7:00 – 10:00 PM?)
- After all NMR (an evening ~April 9\textsuperscript{th}, 7:00 – 10:00 PM?)
- Week of May 10\textsuperscript{th} to 14\textsuperscript{th} (to be announced mid-February)

Dates for the two midterms will be determined by our progress through the material, but they are tentatively scheduled for approximately March 1\textsuperscript{st} and April 29\textsuperscript{th}, as noted above. Under current UI policies, the final examination date and time will be announced during the first half of the semester by the Registrar. The final examination date and time for this course will be announced in class once it is known. Do not make any end-of-the-semester travel plans until the final exam schedule is made public by the Registrar.

COURSE GRADES: Final grades will be based on exam performance. The two mid-term exams will each be worth 30 percent of the final grade, while the final exam will be worth ~40 percent. Grades will be curved depending on the performance of this year's class.

Each student will be expected to contribute three spectroscopy problems over the course of the semester, one for each of the three sections of the course, by dates to be announced in class. These problems should be e-mailed to the instructor as a PDF file or ppt slide. Efforts will be made to solve many in class before any answers are posted, so that they can be used to maximum effect in developing problem-solving skills and experience, and to provide exposure to different kinds of situations and data sets. These problems must be ones where the student knows the answer, i.e. no unknowns from your research! Collected sets of these problems will be distributed to allow more practice. Exams from last year also will be provided via ICON, along with their answer keys.
Absences and Attendance. Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing course absence policies, which vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, unavoidable circumstances, and University authorized activities (https://clas.uiowa.edu/students/handbook/attendance-absences). Students may use the CLAS absence form to aid communication with the instructor who will decide if the absence is excused or unexcused; the form is located on ICON within the top banner under “Student Tools.”

Academic Integrity. All undergraduates enrolled in courses offered by CLAS have in essence agreed to the College’s Code of Academic Honesty. Academic misconduct affects a student’s related grade and is reported to the College which applies an additional sanction including suspension. Outcomes about misconduct are communicated through UI email (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).

Accommodations for Disabilities. UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as a mental health, attention, learning, vision, and a physical or health-related condition) by registering with Student Disability Services (SDS). The student is then responsible for discussing specific accommodations with the instructor. More information is at https://sds.studentlife.uiowa.edu/.

Administrative Home of the Course. The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other UI colleges may have different policies for courses offered by that college. CLAS policies may be found here: https://clas.uiowa.edu/students/handbook.

Classroom Expectations. Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life (https://dos.uiowa.edu/policies/code-of-student-life/). This includes related UI policies and procedures that all students have agreed to regarding the COVID-19 pandemic. Particularly, each student must wear a face mask when in a UI building, including a classroom. The density of seats in classrooms has been reduced, and in some instances, this will allow 6 feet or more of distance while other cases, it may be less. Regardless, wearing a face mask and maintaining as much distance as is possible are vital to slowing the spread of COVID-19. In the event that a student disrupts the classroom environment through the failure to comply with a reasonable directive of an instructor or of the University, the instructor has the authority to ask that the student to leave the space immediately for the remainder of the class period. Additionally, the instructor is asked to report the incident to the UI Office of Student Accountability, with the possibility of additional follow-up with the student. Students who need temporary alternative learning arrangements (TALA) for a future semester related to COVID-19 should visit this website for more information: https://coronavirus.uiowa.edu/temporary-alternative-learning-arrangements-tala.

Class Recordings: Privacy and Sharing. Some sessions of a course could be recorded or live-streamed. Such a recording or streaming will only be available to students registered for the course. These recordings are the intellectual property of the faculty, and they may not be shared or reproduced without the explicit written consent of the faculty member. Students may not share these sessions with those who are not enrolled in the course; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and in some cases is a violation of the Federal Education Rights and Privacy Act (FERPA).

Communication and the Required Use of UI Email. Students are responsible for official correspondences sent to the UI email address (uiowa.edu) and must use this address for all communication within or with UI (Operations Manual, III.15.2).

Complaints. Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences. See this page for more information: https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.

Final Examination Policies. The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals with a few exceptions made for particular types of courses such as labs or off-cycle courses: https://registrar.uiowa.edu/final-examination-scheduling-policies.
Nondiscrimination in the Classroom. The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University’s Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (https://diversity.uiowa.edu/eod; +1 319 335-0705 or diversity.uiowa.edu)

Sexual Harassment. Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see https://osmrc.uiowa.edu/.