Course overview and format: This class is designed to provide in-depth coverage of the techniques and data interpretation used in modern organic structure analysis. The class is organized with lectures, problem solving sessions, student presentations, and exams. Your grade will be determined based on individual performance on exams and presentations. Homework problems and other assignments will not be graded, but your effort on them will contribute to the participation component of your grade.

Topics that will be covered (topics may be covered in a different order):

- Introduction and overview of organic structure analysis
- Synthesis of spectroscopic methods: review of MS, IR, UV
- Synthesis of spectroscopic methods: review of NMR
- Synthesis of spectroscopic methods: integrated problem solving
- MS methods and instrumentation
- MS fragmentation patterns
- Infrared and Raman spectroscopy
- Ultraviolet spectroscopy
- Absolute configuration analysis (CD, VCD, and X-ray)
- Introduction to NMR spectroscopy
- NMR theory and instrumentation
- NMR – the chemical shift and coupling
- 2D NMR
- Special topics in NMR

Performance and expectations: In addition to understanding the theory behind the techniques covered in class, students are expected to develop critical skills necessary to acquire and interpret spectra of organic compounds. Success in learning and applying organic spectroscopy to problem solving is directly related to the time invested in practicing these methods. Numerous practice problems can be found in textbooks and students are encouraged to use these resources fully. It is up to the student to apply themselves to the study of the topics covered in class as needed.

Required Textbook: Organic Structure Analysis – 2nd Edition (Crews, Rodriguez, and Jaspars). In addition, you are expected to engage in reading outside of class to further advance your understanding of the topics discussed in lecture. Extensive reading of journal articles relevant to the topics discussed in class is expected and required for success in this class.

Exams and grading: One midterm test (100 points) and one final exam (200 points) will be given. The test and exam will be comprehensive of the material previously covered in class. There will be four structure-solving projects (100 points each). Problems will be periodically assigned in class and students selected at random to solve them in front of the group. A total of up to "50" points will be awarded by the instructor at the end of the term for student performance and participation on these problems. In certain cases, the assigned problems and test content may vary for graduate and undergraduate students. No make-up tests will be given except under extraordinary circumstances that are documented and accepted by the instructor and The University of Oklahoma. The authenticity and validity of all documentation will be verified by the instructor. Examples of excused absences include emergency military duty, medical trauma (to the student), and death of an immediate family member. In these cases, the student must contact the instructor by official University email and the email must be time-stamped and received prior to the start of the missed exam. Excuses not meeting these criteria or falling outside of the realm of acceptability as detailed above will not be considered. Examples of unexcused absences include, but are not limited to personnel trips/vacations, interviews, "car" trouble, non-emergency medical care, sick pets, child care, and others. All decisions regarding the acceptability of an absence will be made by the instructor and all decisions will be final. It is important that all students arrive to the tests and exam on time. Once the first student has turned in the answers to their quiz, test, or exam, no students will be allowed to begin a test or exam. Once an assignment has been graded and returned, students will have a maximum of five business days to petition for a grade change. No exceptions will be made.

Students meeting the criteria cited above for a make-up exam must complete the exam within one week of the excused absence. Make-up tests and exams will be conducted as oral examinations and will be comprehensive.
Students must bring 1-3 number two (#2) pencils to each quiz, test, or exam and their personal spectroscopy notebooks (described below). No other materials including additional writing implements, calculators, study aids, cell phones, or any electronic devices will be allowed for any reason. If the student brings a bag, umbrella, or other similar item to the exam, it must be left at the front of the room for the entire exam period. All hats, sunglasses, and other paraphernalia that obstruct the instructor's ability to see a student's face and hands during the exam will not be allowed. Students leaving the room for any reason during a test or exam must first turn in their test or exam and they will not be allowed to continue working on the test or exam. Students failing to meet these requirements will receive a grade of zero for the entire test or exam and may be subject to University sanctions.

Students are expected to seat themselves during tests and exams so as to minimize the chance that a student's test or exam materials can be viewed by any other student. Students must comply with instructor issued directions regarding where to sit during all tests and the exam. No student will be allowed to change seating once an exam or test has started. However, the instructor reserves the right to move any student to any location in the classroom at any time so as to minimize the chance that a student can view another student's work or have their material viewed by another student.

Cheating of any kind will not be accepted. Cheating is defined as an act performed so as to give a relative or unfair advantage to any person on a test or exam. Cheating of any kind will be dealt with by official University channels and will be punishable by penalties including failure of the test, exam, or course, and expulsion.

Grading:

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<thead>
<tr>
<th>Percent of total (750) points</th>
<th>≥80%</th>
<th>70 – 79%</th>
<th>60 – 69%</th>
<th>50 – 59 %</th>
<th>&lt; 50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

All points earned will be expressed as a percentage of the total points possible in the course and a grade assigned according to the preceding table. All grades will be rounded appropriately (for example 86.5% = 87% while 86.4% = 86%). There are no exceptions.

**Personal spectroscopy notebooks:** Students will be allowed to prepare a notebook for use during instructor specified portions of the exams. Student may only bring one notebook to the exam. The notebook must consist of a three-ring binder in which the notes are securely bound. No electronic media or unbound materials are allowed. Notes may be prepared in any format (text, tables, graphs, illustrations, etc.) desired by the student and can consist of handwritten notes or photocopied pages from textbooks. Notebooks are subject to examination by the instructor and violations of these rules will result in the notebook being confiscated and a grade of “0” points assigned for the exam. Notebooks may not be shared during the exams.

**Attendance:** Attendance will not be recorded for lectures. However, you are strongly advised to attend all lectures since items will be discussed and announcements made regarding tests and examinations that could influence your likelihood of success in the course.

**Email Communication:** In order to aid communication, the University has established email as an acceptable means of official communication. All University students are assigned an official University email account. Your instructor will be communicating with you through this account periodically. Email sent to this account is expected to be read by you in a timely fashion. For convenience, you can arrange to have your email forwarded to another email account; however, the University warns that you do so at your own risk. Failure to receive or read, in a timely manner, the communications sent to you via your official email account does not absolve you from knowing the information being sent to you.

Any correspondence with the instructor must include the phrase “CHEM 4970/6680” in the subject line. Email not including this specific notation will likely result in its classification as “junk mail” and it will not be read. The instructor will make all possible efforts to respond to any email inquiry within 48 hours after it was received.

**Academic Misconduct:** Students engaging in academic misconduct (including cheating, plagiarism, and any other action that may improperly affect evaluation) will be subject to sanctions in accordance with the Norman Campus Academic Misconduct Code. You should understand that your instructor takes these matters seriously. Students who are caught in any form of academic misconduct should expect extremely severe penalties.

**Use of Cell Phones and Electronic Devices:** No active cell phones are allowed in the classroom. Any active cell phone (seen or heard) by the instructor can result in a penalty of 50 points deducted from your final score per incident. No electronic device can be used for the purposes of recording (audio or visual) any class content without the prior permission of the instructor. Violations of this policy will result in a penalty of 50 points deducted from your score per incident. No electronic devices of any kind will be allowed during exams. Violation of this rule will result in the forfeiture of your exam and a grade of “0” points assigned for the exam. These penalties are used in order to minimize potential distractions in the classroom learning environment for your fellow students. In addition to the penalties listed above, violation of these rules may result in your removal from the classroom.

**Extra Credit, Bonus Points, and Grade Adjustments:** There are no extra credit or bonus points in this course. The instructor reserves the right to adjust student grades at the conclusion of the semester (e.g., apply a ‘curve’).

**Other University and Instructional Policies:** Each student should acquaint her or his self with the University’s codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on physical handicap. The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with
disabilities who require accommodations in this course are requested to speak with their instructor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone (405) 325-3852 or TDD only (405) 325-4173.

A Final Reminder: The instructor reserves the right to change any items contained in this syllabus. This includes, but is not limited to: course content, scheduled dates, and fraction(s) of final grade assigned to individual components of the course. Students engaging in academic misconduct (including cheating, plagiarism, and any other action that may improperly affect evaluation) will be subject to sanctions in accordance with the Norman Campus Academic Misconduct Code.