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

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 will include lectures, ungraded homework assignments, and quizzes/exams. Your grade will be determined based on individual performance on quizzes/exams and in-class participation. Any homework will not be graded, but your effort on assignments will contribute to the participation component of your grade. This course has an additional practicum component (CHEM 5480, 1 credit) that runs from Apr. 5 – May 5 and provides a “hands-on” experience for structural determination. For more information on this related course, please speak with the instructor.

Topics that will be covered (not necessarily in this order):
- MS methods and instrumentation
- MS fragmentation patterns
- Infrared and Raman spectroscopy
- Ultraviolet spectroscopy
- Absolute configuration analysis (CD, VCD, X-ray)
- NMR spectroscopic methods
- NMR theory and instrumentation
- NMR: interpretation
- 2D NMR
- Special topics and current events in structural characterization

Performance and expectations: In addition to understanding the theory behind 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.

Grading: Three quizzes (25 pts each), two tests (100 pts each) and one final exam (200 pts) will be given. **ALL** exams and quizzes will be comprehensive of material previously covered in class. Point breakdown is as follows:
- 3 quizzes × 25 pts = 75
- 2 tests × 100 pts = 200
- participation = 50
- final exam = 200

No make-up tests will be given, except under extraordinary circumstances that are documented and accepted by the instructor and the University of Oklahoma. 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 email, which must be time stamped and received prior to the start of the missed exam. Excuses falling outside the realm of acceptability will not be considered. All decisions regarding the acceptability of an absence will be made by the instructor and will be final. Once an quiz/exam has been graded and returned, the student will have 5 days to petition for a grade change. No exceptions will be made.

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<th>Percent of total (525) points</th>
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<td>Grade</td>
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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. At the end of the course the instructor reserves the right to adjust student grades as a whole (i.e. apply a “curve”).

**Personal spectroscopy notebooks:** Students will be allowed to prepare a notebook for use during instructor specified portions of the quizzes/exams. 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 exam.

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

**Email communication:** In order to aid in 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. It is expected that you will read email sent to this account in a timely fashion. 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 sent to you.

Any correspondence with the instructor must include the phrase CHEM 5450 in the subject line. Email not including this specific notation will likely result in its classification as “junk mail” and it will be triaged and not 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 (http://integrity.ou.edu/). You should understand that your instructor takes these matters seriously.

**Use of cell phones and electronic devices:** No active cell phones are allowed in the classroom. Any active cell phone seen or heard in the classroom by the instructor during class 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 video) any class content without the prior consent of the instructor. Violations of the aforementioned policy will also result in a 50-point deduction per incident. No electronic devices are allowed during exams and infraction will result in a “0” grade.

**Extra credit, bonus points:** Sorry, none available!

**University policies and disability accommodation:** Students should acquaint themselves with campus wide codes, policies and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination (http://catalog.ou.edu/current/Policies.htm). The instructor is obligated to inform the necessary university office upon infringement of any university policy/code. The university is committed to providing reasonable accommodation for all students with disabilities and students with disabilities are requested to speak with the instructor as early as possible in the semester so accommodations can be implemented. The Office of Disability Services is located in Goddard Health Center, suite 166, phone (405) 325-3852 or TDD only (405) 325-4173. For more information please refer to: www.ou.edu/drc/home.html

**As the course develops, it might be desirable/necessary to make appropriate changes in aspects of this syllabus. The instructor reserves the right to make changes if desirable or necessary.**
**Tentative Class Schedule** (subject to change)

Tuesday January 19th: Introduction & Characterization Overview
Thursday January 21st: IR (Theory and Shifts)
Tuesday January 26th: IR/UV
Thursday January 28th: **QUIZ** Mass Spec (Ionization Techniques)
Tuesday February 2nd: Mass Spec (Mass Analyzers)
Thursday February 4th: Mass Spec (Interpretation)
Tuesday February 9th: **EXAM #1**
Thursday February 11th: **1H NMR** (Theory & Shifts)
Tuesday February 16th: **1H NMR** (Shifts & Splitting Patterns)
Thursday February 18th: **1H NMR** (Built-in-cushion day)
Tuesday February 23rd: **QUIZ** **13C NMR**
Thursday February 25th: **13C NMR**
Tuesday March 1st: **EXAM #2**
Thursday March 3rd: **2D- NMR** (Concept & Theory)
Tuesday March 8th: **2D- NMR and Special Pulse Sequences** (Focus: COSY, HSQC)
Thursday March 10th: **2D- NMR and Special Pulse Sequences** (Focus: TOCSY, INADEQUATE, HMBC)
Tuesday March 15th: **RESEARCH PRODUCTIVITY WEEK** (No class)
Thursday March 17th: **RESEARCH PRODUCTIVITY WEEK** (No class)
Tuesday March 22nd: **QUIZ** **2D- NMR and Special Pulse Sequences** (Focus: ROESY, NOESY, etc...)**
Thursday March 24th: ECD, VCD, X-ray
Tuesday March 29th: Problem work-day | Make-up/catch-up day
Thursday March 31st: **Final Exam**