

# Chemistry 326

## Organic Chemistry II

### Fall, 2017

**Instructor:** David Lewis

**Office:** Phillips Hall 457 e-mail: lewisd@uwec.edu; office phone 836-4744.

**My Schedule:**

	Monday	Tuesday	Wednesday	Thursday	Friday
8-9	Cardiac Rehab	Research	Cardiac Rehab	Research	326-313 lab
9-10	Cardiac Rehab	Tutorial	Cardiac Rehab	Tutorial	326-313 lab
10-11	Lab Prep for week	Research	Grading, etc.	Research	326-313 lab
11-12	Lunch	Research	Lunch	Research	Lunch
12-1	DPC Mtg	Lunch	Faculty Mtg	Lunch	Seminar
1-2	326-311 lab	Research	326-312 lab	Research	Research
2-3	326-311 lab	Chem 326-001	326-312 lab	Chem 326-001	Research
3-4	326-311 lab	Chem 326-001	326-312 lab	Chem 326-001	Research
4-5	Tutorial	Tutorial	Tutorial	Out of office	Out of office

**Course Schedule:** TR 2:00-3:15 Phillips 117

**Office Hours:** In addition to the tutorials, I will hold office hours by appointment.

**Textbook:** "Organic Chemistry" 2nd Edition, by David Klein (John Wiley). The book is bundled with a solutions manual. Although they can be useful, solutions manuals are, in my experience, a two-edged sword: when used properly, they can enhance your learning, but if not used properly, they can give you a false sense of confidence, which is dangerous.

You should have a set of molecular models to use in class and in the lab. For what it is worth, I have about 10 sets myself.

**Purpose:** This course is the second half of a two-semester course in organic chemistry including laboratory. In this course, we will conclude the study of functional group chemistry that was begun in Chemistry 325.

This course explicitly addresses the following academic goals of the baccalaureate:

- knowledge of human culture and the natural world
- creative and critical thinking
- effective communication

**Attendance Policy:** It is in your own best interests to attend and participate in class. From time to time, a question may be asked in class, and the student answering (correctly or not) will be awarded bonus points. Attendance will be recorded, since we are required to keep attendance records for students obtaining financial aid, but your attendance will not be used in assigning your grade (except bonus points). Persons not attending the first lecture of the year may be dropped from the rolls and their space assigned to

another student. Excessive absences will be reported to the Dean of Students. In the event of an absence, you are responsible for all material discussed, and all announcements and assignments made.

50-pt Examination	Thursday, September 21
125-pt Examination 1	Thursday, October 19
125-pt Examination 2	Tuesday, November 21
Final Examination	<b>Tuesday, December 19, 2:00 pm</b>

**Assessment:** Your grade in this class will be determined by your performance in examinations and quizzes as measured by the total points gained. *Individual examinations and quizzes will not be curved.* One 50-point, 30-minute examination (and that means 30 minutes, not 31 minutes) and two 125-point (75-minute) examinations will be held during class during this semester, and the final examination will be held on Friday, May 20, at 1:00 p.m. The final examination will be the ACS comprehensive examination in organic chemistry. The examination schedule is given above; arrangements to take exams at times other than those scheduled due to a *university-excused absence* on that day should be made prior to when the exam is scheduled.

Quizzes have been placed on D2L, and will be open for 30 minutes each Friday. If that changes, I will let you know before that week's quiz. The quizzes will be randomized (both question order and answer order), and administered weekly except for those weeks when there is an examination. Every question will have a "none of the other answers is correct" option simply because I sometimes do make mistakes (gasp!) and I don't want you puzzling over a question that has no correct answer. I will not deliberately write any question that does not have a correct answer. Each quiz will be worth 5 points, for a total of 45 points.

*You will be permitted to bring molecular models to examinations in a clear plastic baggie.* If you bring them in an opaque container, you will not be permitted to open the container.

If you must miss an examination for a *University-excused* reason, see me to arrange an alternative. Examinations missed for excused absences may be made up by taking a make-up exam (but try not to miss: my make-up exams are, by student report, usually more difficult than the original in spite of my efforts to keep them at the same level of difficulty). University-excused reasons include things such as a medical emergency, a death in the family, military obligations, or University-sanctioned field trips. Examinations missed for non-University-excused reasons may not be made up; non-University-excused reasons include missing your plane coming back from Thanksgiving, a friend's wedding, etc. If in doubt, ask me; you may appeal my decision to the Dean of Students office.

The total number of points possible in this course is 700 points: The final examination is comprehensive. You may replace your lower 125-point examination score with your percentage on the final examination if that improves your score (I think that if you show improvement on a comprehensive examination, you should be able to replace the results of one bad day). Your score on the 50-point examination may not be replaced. Also, **a score of zero may not be replaced.**

Quizzes (D2L), etc.	100
Semester Examinations (3)	300
Final Examination	200
Lab contribution	150
<b>TOTAL POSSIBLE SCORE</b>	<b>750</b>

The point scores shown at right will be required to earn the letter grade indicated. This scale is based on my philosophy that a 90-80-70-60 grade scale is based on examinations that have 40 points of questions that nobody has to study for, so this scale is really (50/60)-(40/60)-(30/60)-(20/60), or 83-67-50-33. When we add in the lab, which averages around 80%, we get the scale in the table.

Grade	Point Score	Percent Score
A	635-750	84.7-100
B	520-634	69.3-84.5
C	405-519	54-69.2
D	290-404	38.7-53.9
F	0-289	0-38.6

Plus and minus grades *may* be assigned, but not necessarily. For students enrolled on a S/U basis, letter grades of C or higher will be recorded as an S, grades of C- or lower will be recorded as a U.

### **Statement on Academic Integrity**

I consider any academic misconduct in this course as a serious offense, and I will pursue the strongest possible academic penalties for such behavior. The disciplinary procedures and penalties for academic misconduct are described in the UW-Eau Claire *Student Services and Standards Handbook* in the section titled, “Chapter UWS 14—Student Academic Disciplinary Procedures.”

**Special Requirements:** Any student who has a disability and is in need of classroom accommodations, please contact me and the Services for Students with Disabilities Office in Centennial Hall 2106 at the beginning of the semester. I have made such accommodations routinely during my time here at UW-Eau Claire, so please avail yourself of this opportunity.

**Individual Differences, Social Group Identities, and Campus Support:** All students are encouraged to contact me about any individual needs and social group identities that may be relevant to the quality of their class experience. Such individual needs may relate to English language proficiency, parental or other caregiving responsibilities, cultural and/or gender identities, veteran status, immigration status, mental health needs, or other factors. As an instructor, I am committed to helping all students connect with campus support and to maintaining a supportive class environment for everyone in my classes.

### **Important dates:**

- **September 19:** Last day to drop full-semester fall courses with no record. Last day to register for full-semester fall courses without dean’s approval. Last day to change grade basis to/from Satisfactory-Unsatisfactory or Audit. After this date a Change of Registration form with proper signatures is required.
- **November 14:** Last day to file withdrawal from the University with “W”s.

### **Non-distribution of class notes**

I do not consent to having notes from my class uploaded to the internet, including commercial note-selling websites such as StudySoup. Some companies target students and solicit course material acting as if they are working in coordination with colleges and universities, but that is not true for this class. This means that you do not have the right to provide your notes to anyone else or to make any commercial use of them without express prior permission from me. Unless you are a qualified disabled student, you do not have the right to record my lectures. Inappropriate use of notes may be in violation of the Blugold Conduct Code and sanctions will be pursued accordingly.

**Tutorial Sessions (Drill Sessions):** I will place a number of my old examinations from the last decade on D2L. On Mondays, Tuesdays and Wednesdays at 4:00, I will hold *voluntary* tutorials (i.e. you don't have to come if you don't want to) where I will answer any questions that you may wish to ask, including answering questions from my old exams. Students who have regularly attended these tutorial sessions in the past have found them to be valuable, and I hope that many of you will find the time to attend. Of course, I hope most of you will get the practice problems right, anyway...

Examining my old exams will show you one thing: I write very few single-concept questions (i.e. only one piece of knowledge needs to be used to get the answer). I tend to write questions that require you to think, and to combine different learned concepts to get the full correct answer.

You can see the types of questions that I write, and the material that I think you should know going into Chem 326, by looking at the sample final examination for Chem 325 and the sample examinations from Chem 326, which are already available on D2L.

**Laptops, Cell Phones and Lecture Notes:** I believe that it is important for you to *write* during class, and to take notes (i.e. “**active learning**”). Taking notes using a pen or pencil requires you to think about what you are writing so that you get the most important points down: it is virtually impossible for you to take it down verbatim. This then aids you in retaining the material. This extra learning does not occur when you sit at a laptop and simply transcribe what I am saying, or when you use your cell phone to photograph the screen. Therefore, I do not want you using these electronic devices in class. I know that you may miss some material, but to compensate for this, I keep a copy of my lecture notes and the notes from the Tutorial Sessions in Phillips 426 for your consultation.

**One technique for studying organic chemistry:** The best way to approach organic chemistry is to do as many problems as you can. One approach that I have recommended for students in trouble is to devote one (honest) hour per day to study. On the first night, do 30 minutes of reading and note-taking, and mark the place at the end of the chapter where the questions about this material are. On night 2, open directly to the questions, and see if you can do them without having to look back on what you read on night 1; if you can, then do another 20 minutes reading, and mark the next set of questions. If you can't, go back and re-study the night 1 material as well as some new material. On night 3, check to see if your answers from night 2 were correct. If they were, you are OK on that material; if not, you need to go back and re-study the material. Once you get into the swing of things, you should be working in the order: answer questions; grade last night's questions; do revision reading and/or new reading and note-taking.

And remember: the Tutorial Sessions are for you to get the answers to questions that you still can't work out. I am open to *any* question at the Tutorials (except “will you show us one of the questions for next week's test?”).

## Chem 326 Laboratory-Fall 2017

	Dates	Experiment	Reports (pts)
	Sept 6, 8, 11	Check in, Safety, Infrared spectroscopy of unknowns	
	Sept 13, 15, 18	Introduction to $^{13}\text{C}$ NMR spectroscopy—molecular symmetry	IR Problems (10)
Lab 1	Sept 20, 22, 25	Expt 1: Diels-Alder reaction; more $^{13}\text{C}$ NMR spectroscopy	
Lab 1	Sept 27, 29; Oct 2	Expt. 1: Bromine addition; more $^{13}\text{C}$ NMR spectroscopy	
Lab 4	Oct 4, 6, 9	Expt. 2: Nitration of methyl benzoate; $^1\text{H}$ NMR spectroscopy Clean glassware for Expt. 3	Expt. 1 (15)
Lab 5a	Oct 11, 13, 15	Expt. 3, Part I-II: synthesis of benzhydrol	Expt. 2 (10)
Lab 5b	Oct 18, 20, 23	Expt. 3, Part III: isolation and purification of benzhydrol	
Lab 5c	Oct 25, 27, 30	Expt. 3, Part IV: oxidation of benzhydrol; purification of benzophenone	Expt. 3 (30)
Lab 5d	Nov 2, 4, 7	$^1\text{H}$ NMR spectroscopy and mass spectrometry; Problem set	Problem set (10)
Lab 6a	Nov 1, 3, 6	Expt. 4: Fischer esterification; more $^1\text{H}$ NMR spectroscopy and mass spectrometry; <b>Lab Exam 1</b>	
Lab 6b	Nov 8, 10, 13	Expt. 4: identification of acid and alcohol; more NMR	Expt. 4 (15)
Lab 7a	Nov 15, 17, 20	Expt. 5, synthesis of chalcones	
Lab 7b	Nov 27, 29; Dec 1	Expt. 6: Mystery Reaction; mass spectrometry (continued)	Expt. 5 (10)
Lab 7b	Dec 4, 6, 8	Expt. 6: Mystery Reaction; <b>Lab Exam 2</b>	Expt. 6 (20)
	Dec 11, 13, 15	Lab Check Out; turn in Expt 6.	

### Safety Goggles

All persons in chemistry labs are required to wear approved chemical splash goggles (not glasses) while they or others are working with chemicals in lab.

Chemical splash goggles do not have any perforations or holes that might allow liquids to pass through to the wearer. **Students must have goggles by the second lab period**, preferably by the first period. Students who do not have goggles will not be permitted to work in lab.

While not required, a laboratory coat is also a worthwhile investment to protect your clothing. You will note that while I do not have a laboratory coat, I also wear old and grungy clothing to lab. If I need to wear good clothes during a lab day, I borrow a lab coat.

**All Students need to bring their own Lab Lock for their lab drawer.**

**Text** Chemistry 325 Laboratory Manual. Students should also consult their Chem 325 text (Klein) for other background information.

### **Laboratory Points**

The points associated with each experiment are shown in the schedule of experiments. IN addition, there will be two laboratory examinations, each worth 15 points, covering the chemistry and spectroscopy that you have learned in the laboratory.

Letter grades for Chem 325 will be assigned on the basis of a percentage of total points, of which lab points will contribute ~21-22% of the total points. The grading scale is given in your lecture syllabus.

**Class Attendance:** Attendance at each lab period is REQUIRED. If you miss a lab for an unexcused absence, you will forfeit the points that could be earned from any data sheets based on the lab work that day, and from any homework or quizzes collected during that lab period.

**If you miss lab three or more times with unexcused absences, you will fail Chem 325, even if you have enough points for a passing grade.**

Make-up labs will be allowed only for excused absences, and if the student communicates with the instructor within 4 working days (The typical timeline for lab assignment deadlines and changes to the next lab experiment is about one week.) If you wish to make up a lab in one of the other sections you must have permission in advance.