

## CEM 252: “Organic Chemistry II” — Sections 201-206 – Summer 2018

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**Course Content:** “Continuation of CEM 251 with emphasis on polyfunctional compounds, particularly those of biological interest”

**Instructor:**

Fangyi Shen                      Office hours: W 10:30 -11:30 pm or by appointment, 433  
Chemistry. email: [shenfang@chemistry.msu.edu](mailto:shenfang@chemistry.msu.edu)

**TAs:**                      Shafaat Mehedi                      Sections: 201, 202; Office hour: W 1-2 pm (81/83 Chemistry)  
email: [mehedimd@chemistry.msu.edu](mailto:mehedimd@chemistry.msu.edu)

Katarina Keel                      Sections: 203, 204; Office hour: Tu 11:30 -12:30 pm (81/83)  
email: [keelkata@chemistry.msu.edu](mailto:keelkata@chemistry.msu.edu)

Yuting Zhou                      Sections: 205, 206; Office hour: M 1-2 pm (81/83 Chemistry)  
email: [zhouyut2@chemistry.msu.edu](mailto:zhouyut2@chemistry.msu.edu)

**Course Coordinator:**                      Ms. Nancy Lavrik  
Office: 382A Chemistry  
email: [lavrik@chemistry.msu.edu](mailto:lavrik@chemistry.msu.edu)

**Lecture Times:** M, W, F 8:00 AM– 9:50 AM, Room 138 Chemistry Building

**Required:**                      1. David Klein, **Organic Chemistry**, 2<sup>nd</sup> Edition, Wiley, ISBN 9781118454312  
2. i>clicker+ ISBN 1-498-60164-2

**Recommended:** 1. David Klein, **Organic Chemistry, Study Guide**, 2<sup>nd</sup> Edition, Wiley

**Policy on Cheating:** Any student caught cheating will receive a grade of 0.0 for the course. In addition, a letter describing the incident will be sent to the chairperson of the Chemistry department, as well as that student's Department Chair and College Dean. In order to discourage cheating, we may make copies of some exams or quizzes. These copies will be destroyed after the end of the semester. Moreover, even the hint of impropriety will be investigated and at times original copies of test materials may be retained by the instructor and photocopies returned to students.

**Planned Lecture/Reading/Exam Schedule:**

<u>CHAPTER</u>	<u>TOPIC</u>	<u>DATE COVERED</u>
Chapter 13	Alcohols and Phenols	Jul. 2
Chapter 20	Aldehydes and Ketones	Jul. 6
Chapter 15/16	Spectroscopy review	Jul. 9
Chapter 17	Conjugated Pi Systems	Jul. 11
Chapter 18	Aromatic Compounds	Jul. 13
Chapter 19	Aromatic Substitution Reactions	Jul. 16
Chapter 21	Carboxylic Acid Derivatives	Jul. 18
<b>EXAM 1</b>	<b>Chapters 13, 15/16, 17, 18, 19, 20, 21</b>	<b>July 20<sup>th</sup> (Friday)</b>
Chapter 21	Carboxylic Acid Derivatives (Continued)	Jul. 23
Chapter 22	Alpha Carbon Chemistry	Jul. 25
Chapter 22	Alpha Carbon Chemistry (Continued)	Jul. 27
Chapter 23	Amines	Jul. 30
Chapter 24	Carbohydrates	Aug. 1
Chapter 26	Lipids	Aug. 3
Chapter 25	Amino Acids and Peptides	Aug. 6
Chapter 25	Amino Acids and Peptides (Continued)	Aug. 8
<b>EXAM 2</b>	<b>Chapters 15/16, 21, 22, 23, 24, 25, 26</b>	<b>August 10<sup>th</sup> (Friday)</b>
Review	Chapters 13–26	Aug. 13
<b>FINAL EXAM</b>	<b>All Inclusive</b>	<b>August 15 (Wednesday)</b> <b>8:00– 9:50 A.M.</b>

**QUIZ DATES BY SECTION****Room**

Section 201 (MW 10:20 am): Jul. 2, 9, 16, 25, Aug. 1, 6	126
Section 202 (MW 11:30 am): Jul. 2, 9, 16, 25, Aug. 1, 6	126
Section 203 (TuTh 9:10 am): Jul. 3, 10, 17, 26, Aug. 2, 7	323
Section 204 (TuTh 10:20 am): Jul. 3, 10, 17, 26, Aug. 2, 7	126
Section 205 (MW 10:20 am): Jul. 2, 9, 16, 25, Aug. 1, 6	323
Section 206 (MW 11:30 am): Jul. 2, 9, 16, 25, Aug. 1, 6	323

**Grading:** There will be two examinations given during the lecture period on the dates indicated. These will count 100 points each. Six quizzes (25 points each) will be given in recitations. You must take each exam and quiz in the lecture or recitation section in which you are enrolled. Your total points and their relationship to your final grade will be determined as follows.

Two Examinations	=	200	points
Four Best Quizzes	=	100	points
Final Examination	=	200	points
<b>Total</b>	=	<b>500</b>	<b>points</b>

<u>Grand Total</u>	<u>Grade</u>
≥ 425	4.0
375 - 424	3.5
350 - 374	3.0
315 - 349	2.5
275 - 314	2.0
235 - 274	1.5
200 - 234	1.0
< 199	0.0

### **Recitations and Quizzes:**

**Recitations begin July 2<sup>nd</sup>.** These periods will be devoted to giving and going over quizzes, answering questions, assisting students in problem solving, and returning and going over hourly examinations. Since your recitation instructor keeps course records, it is critical that you know your recitation instructor's name and your recitation section number by the time of the first recitation/quiz. For extra help, you may see any CEM 252 TA during scheduled office hours. Please do not enter graduate labs at other times since dangerous chemicals are always present and potentially dangerous experiments may be in progress.

Quizzes must be taken in the section in which you are enrolled. Quizzes for recitation sections that meet Tuesday will cover material through the previous Monday's lecture. Quizzes for recitation sections that meet Thursday or Friday will cover material through the previous Wednesday's lecture. *Note: The first quiz will also cover material from CEM 251 that should be considered general knowledge.* Bonus Points Available: Quizzes and mid-term exams will be returned during the next recitation. You will be awarded 1 bonus point, each time you are present when that recitation's quiz is returned and 2 bonus points if you are present at your recitation when the mid-terms are returned

**Missed Exams and/or Quizzes: No makeup exams or quizzes will be given.\*** So as to accommodate all persons who must miss a scheduled quiz due to religious holidays, unavoidable person commitments, illness, etc., we will allow each student to drop their two lowest quizzes. (The dropping of these two quizzes is NOT meant to provide a means of excusing or minimizing poor quiz performance.) If you miss an hourly examination your course grade will be calculated by adding the point value (100 pts) of the missed exam to the Final Exam. Thus, if you miss one exam, your Final Exam will count for 300 points; and if you miss two exams, your final will count for 400 points, etc.

## Problem Assignments:

**Problem Sets from the Text:** Problem sets assigned from the text will not be graded. However, exams and quizzes will be based upon the lecture material and upon principles and facts exemplified by the assigned problems. Working problems is the single most effective effort you can make in learning organic chemistry; in fact, you cannot learn the material without working many such problems. Furthermore, the MSU Dept. of Chemistry web site also has many interactive problems, practice problems, and links to other web-sites that you may find helpful.

<u>CHAPTER</u>	<u>READING</u>	<u>PROBLEMS</u>
Ch. 15/16	Spectroscopy Chapters for Review	15.40-42, 46, 47, 52, 59 16.34, 37, 53, 54, 55-58, 62-66
Chapter 17	Conjugated Pi Systems	17.32, 33, 35-38, 43, 44
Chapter 18	Aromatic Compounds	18.28, 29, 34, 36, 38, 47, 57, 58
Chapter 19	Aromatic Substitution Reactions	19.43-46, 48, 50, 53, 58, 74
Chapter 14	Ethers and Epoxides	14.31, 33, 39, 42, 43, 51, 53, 55
Chapter 13	Alcohols and Phenols	13.30, 33, 35, 37, 44, 48, 52, 53, 56
Chapter 20	Aldehydes and Ketones	20.44, 50, 53, 56, 57, 60, 66, 75, 76, 77
Chapter 21	Carboxylic Acid Derivatives	21.39, 41, 48-50, 52, 55, 65, 73, 77, 78, 80
Chapter 22	Alpha Carbon Chemistry	22.57, 59, 60, 65, 71, 76, 89, 95, 100
Chapter 23	Amines	23.39, 41, 42, 48, 49, 54, 59, 62, 77, 83
Chapter 24	Carbohydrates	24.42, 47, 49, 56, 57, 65, 67, 81
Chapter 25	Amino Acids, Peptides, and Proteins	25.40, 45, 47, 48, 51, 59, 60, 76, 77, 86
Chapter 26	Lipids	26.29, 33, 37, 38, 43, 45, 52, 54

**Regrading of Exams and Quizzes:** Exams and quizzes will be returned only during the regularly scheduled recitation meeting following the exam or quiz. Any regrading requests must be made at that time to the recitation instructor by means of a note attached to the exam. No exam or quiz that has left the recitation room in possession of the student will be considered for regrading. The entire exam or quiz will be regraded over when a request for regrading is made. Please note that all exams will be scanned and archived.

**Study Hints:** We urge you to consider the following a few points:

1. Organic chemistry in many ways resembles a new language. You cannot avoid quite a bit of memorization (both vocabulary and reaction types), and you must use your expanding knowledge to apply analytical thinking to problem solving. Both mental feats are good practice for any profession to which you aspire.
2. To do well, you have to do a lot of **writing** - write formulas, write equations, so that you can write complex structures quickly. You cannot learn organic chemistry just by reading about it.
3. The best way to do well is to work problems, as many as you possibly can. We will assign some, and the quizzes will be based on them, but try to do as many others as you possibly can. You may consult other chemistry texts in the library for additional problems. Furthermore, the MSU organic chemistry web-page also has many interactive problems, tutorials, and links to other web-sites that you may find helpful.
4. Attendance at lectures is not required, but experience shows that most people who do not attend regularly will not do well.
5. Organic chemistry is a cumulative subject. If you get behind at the beginning, you will get lost, because every new topic depends on what went before it. So keep up to date; don't get behind. **The first quiz will revisit some CEM 251 material, much of which is essential to understanding and mastering the new information in CEM 252.** In this regard the immediate task at hand is to make sure you can recognize and illustrate the common functional groups shown on the inside the back cover of the text. You would also benefit from an immediate review of Chapters 15 and 16.
6. Plan on a minimum of 10 hours/week for study outside of class.

**Supplemental Material:** You may also find Professor Reusch's Virtual Textbook of Organic Chemistry helpful.

**Accommodations for persons with disabilities:** Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities by phone at 517-884-RCPD or through the web at <https://www.rcpd.msu.edu/>. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation ("VISA") form. Please present this form to Ms. Nancy Lavrik at the start of the semester and/or at least two weeks prior to the accommodation one week etc.). Requests received after this date will be honored whenever possible.

**Class Conduct:** Professional, courteous, and ethical conduct is expected of all students at all times. Likewise, diversity among students should be respected. Finally, please turn off your cell phones before entering the classroom.

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