



# CHEMISTRY 273, SYLLABUS, SUMMER 2018

**Instructor: Dr. Jake Zimmerman**  
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**Phone:**  
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**Lecture: 10:30-11:45 AM, MTWRF,**  
**Bilger 152**

**Office hours: MTWRF 12-1 PM;**  
**open door or by appt.**

**Required Text:** *Organic Chemistry*, 5th Edition by Smith

1) UH Manoa bundled package (book, study guide, Connect online homework): ISBN:

**9781259961205**

2) The Student Study Guide **is recommended**

3) The Connect online homework system

4) A Molecular Model kit like Molecular Visions: ISBN 9780964883710

5) The Chemistry Department has put together a manual for CHEM 273L that you must purchase in the UHM Bookstore. This is a less costly alternative to classical texts for Organic Chemistry laboratories.

**Required Equipment:** Darling Models or the HGS model kit (HGS ISBN: 0-7167-4820-7 or similar). Goggles for the laboratory.

**Catalog info:** Organic Chemistry II (CHEM 273) is a 3 credit hour course

**Requirements:** You must have completed CHEM 272 with a passing grade to enroll in this course.

**Course goals:** The course is designed so that the student can develop a basic understanding of organic chemistry structures and reactions thereby laying a foundation for further study in the field and closely related disciplines (e.g. biochemistry, molecular biology, and pharmaceutically relevant sciences).

## Point Breakdown:

3 exams, @ 150 points	450
Online Homework	100
Final Exam	200
<b>TOTAL</b>	<b>750 POINTS</b>

## Grade Scale (%):

>85.0	A
84.9–75.0	B
74.9–65.0	C
64.9–58.0	D

**Quizzes & Exams:** There will be three 150-point exams and a 200-point final exam. The exams will cover everything from the first day of class with an emphasis on the material covered since the previous exam. The three exams will be held during scheduled class time. See the schedule attached for the exact dates for exams and quizzes. The final exam will be cumulative for the semester. There is also a BONUS assignment that will be due at the end of spectroscopy (see schedule below).

**Online Homework (Connect System):** We will be using the McGraw-Hill Connect system for our online homework. It will be graded. I will multiply your percent correct times 150 to get the score for the course.

1. Go to the Connect Web Address for our section:

**<http://connect.mheducation.com/class/j-zimmerman-ochem-2-summer-2018-uhm>**

2. Click on Register Now.

3. Enter your email address (this will become your Connect username). As a best practice, you may want to register with your school/institution email address. TIP: If you already have a McGraw-Hill

- account, you will be asked for your password and will not be required to create a new account.
4. Enter a registration code or choose Buy Online to purchase access online.
  5. Follow the on-screen directions.
  6. When registration is complete, click on Go to Connect Now.

**NO EXTENSIONS ON DUE DATES WILL BE GIVEN.**

Assignments	Due Date
Ch. 13	07/11 (W)
Ch. 14	07/11 (W)
Ch. 15	07/16 (M)
Ch. 16	07/18 (W)
Ch. 17	07/20 (F)
Ch. 18	07/23 (M)
Ch. 19	07/25 (W)
Ch. 20	07/27 (R)
Ch. 21	07/31 (T)
Ch. 22	08/03 (F)
Ch. 23	08/07 (T)
Ch. 24	08/08 (R)

**These are approximate due dates. Please log onto Connect to view the actual due date.**

**Academic Misconduct:** The University expects its students to conduct themselves in a dignified and honorable manner as mature members of the academic community and assumes that individually and collectively they will discourage acts of academic dishonesty. The University also expects cooperation among administrators, faculty, staff, and students in preventing acts of academic dishonesty, in detecting such acts, reporting them, and identifying those who commit them, and in providing appropriate punishment for offenders. To this end, any student deviating from these standards in this course will be penalized to the fullest extent possible.

**Special accommodations policy:** Students requiring particular accommodations because of physical and/or learning disabilities should contact their Dean's office prior to or during the first week of classes.

**Makeups: There will be no makeups given in this course. There are also no early exams/final given.**

**Useful Tips:** Organic chemistry is not hard, but it does require a lot of work on the student's behalf. The most important thing you can do to be successful in this course is to attend every class, stay current and keep up with the material. Unfortunately, organic chemistry is a broad field with a lot of new concepts for you to learn. The material comes very fast and there is really not much I can do other than try to explain the material in a simple and understandable fashion. It just isn't possible to cram for organic chemistry on the night before the exam. It is much better to study for one or two hours everyday rather than 12 hours over a weekend. It is not easy to absorb all the material in one sitting, and a daily study routine will make comprehension much easier. It will take effort on your part to learn organic chemistry.

Learning organic chemistry is very much like learning a foreign language. You need to learn the vocabulary in terms of names, structures and types of functional groups. You also need to learn the rules of grammar. For example, how an alcohol will react with a halide, etc. Once you learn certain rules, they can be applied to many different reactions. Thus you can construct chemical sentences. There will be a

certain amount of memorization required, however, because of the vastness of the subject, learning general trends and rules will be most helpful.

**HOMEWORK: WORK ALL OF THE PROBLEMS IN THE TEXT AND ANY OTHERS THAT MAY BE ASSIGNED!** You are **strongly urged** to work through the problems as many times as it takes to become proficient with the material. This will take a lot of work on your part, but it will be key to your success in this class.

**Suggestions:** Read the assigned chapter or sections before coming to class, ask questions, rewrite your notes after every class, DO THE PROBLEMS, use the solutions manual only as a tool – try to understand the problem before looking at the answer, use flash cards to understand structures, names and reactions, working with partners or small groups can be useful, use your molecular models and utilize my office hours and open door policy.

If you are having difficulty with this course, come to see me ASAP. If you do not know where to start asking questions, the question that needs answered is “When can I get in to see my instructor?”

Also, see the link to Golden Rules to learning Org. Chem.: <http://tinyurl.com/onuorganic>

**Tentative Class Schedule:\***

<b>Date</b>	<b>Topic</b>	<b>Reading</b>
07/02 M	Introduction Spectroscopy; Using Molecular Formula (MF); UV Spectra and Conjugation	10.2; 13; 16.15
07/03 T	Infrared Spectroscopy	13.5-13.8
07/04 W	Independence Day, No class	
07/05 R	Intro to NMR Spectroscopy; <sup>13</sup> C NMR Chemical Shift	14
07/06 F	NMR Spectroscopy, Theory, Terminology, Chemical Shift	14
07/09 M	<sup>1</sup> H NMR: Chemical Shift, Integration, 1 <sup>st</sup> Order Splitting (N+1 rule)	14
07/10 T	<sup>1</sup> H NMR: Splitting (cont.) and examples	14
07/11 W	Mass Spectroscopy and Determining MF; MS Fragmentation; Solving Structure Problems	13.1-13.4
07/12 R	<b>Exam 1 Bonus Problem set due—turn it in on front desk BEFORE exam</b>	
07/13 F	Radical Reactions; Halogenation; Chlorination vs. Bromination; Allylic and Benzylic Halogenation; Addition to Double Bonds; Conjugation; Resonance; Resonance and Geometry; Conjugated Dienes; Electrophilic Addition to Dienes	15-16
07/16 M	Kinetic vs. Thermodynamic Products; Diels-Alder Reactions	16
07/17 T	Benzene and Aromatic Compounds: Structure, Nomenclature and Stability; Huckel's Rule: Neutral Examples, Charged Examples; Orbitals; Frost Diagrams; Fullerenes	17
07/18 W	EAS, Halogenation, Nitration, Sulfonation, Friedel-Crafts; Sulfonation, Friedel-Crafts, Activation-deactivation, Directing Effects, Limitations	18
07/19 R	Disubstituted Rings, Benzylic Bromination, Redox Reactions, EAS & Synthesis	18
07/20 F	EAS & Synthesis; Carboxylic Acids; Nomenclature, Preparation; Acid-Base Properties; Extraction; Sulfonic Acids; Amino Acids	18-19
07/23 M	Preparation; Acid-Base Properties; Extraction; Sulfonic Acids; Amino Acids	19
07/24 T	<b>Exam 2</b>	
07/25 W	Reactions of Carbonyl Compounds; Nucleophilic Acyl Substitution; Reductions; CBS Reagent; Protecting Groups	20
07/26 R	Additions to Acid Derivatives; Additions to Epoxides; Conjugate addition; Synthesis	20
07/27 F	Aldehydes and Ketones; Nomenclature; Preparation; Nucleophilic Addition; Cyanohydrins; Wittig Reaction	21
07/30 M	Imines; Enamines, Hydrates; Hemiacetals; Acetals; Acetal Protecting Groups; Cyclic Hemiacetals	21
07/31 T	Acid Derivatives; Nomenclature; Physical Properties; Nucleophilic Acyl Substitution; Relative Reactivities Hydrolysis; Alcoholysis	22
08/01 W	Aminolysis, Reactions of Carboxylic Acids and Nitriles; $\alpha$ -carbon substitution; Enols; Enolates; LDA; Thermodynamic and Kinetic Enolates; Racemization	22
08/02 R	<b>Exam 3</b>	
08/03 F	Halogenation; Haloform Reaction; $\alpha,\beta$ -Unsaturated Compounds; Enolate Alkylation; Malonic Ester Synthesis	23
08/06 M	Acetoacetic Ester Synthesis; Aldol; Aldol Dehydration; Crossed Aldol; Directed Aldol; Intramolecular Aldol	23-24
08/07 T	Dieckmann; Michael Reaction; Robinson Annulation	24
08/08 W	Amines; Nomenclature; Physical Properties; Preparation of Amines; Gabriel Synthesis; Reduction of Nitro; nitriles and amides Reductive Amination; Amines as Bases; Amines as Nucleophiles	25
08/09 R	Hoffmann Elimination; Diazonium Salts; Reactions of Diazonium Salts; Intro to carbohydrates	25/27
08/10 F	<b>Final Exam</b>	