Chemistry 206 (Organic Chemistry) Syllabus and Schedule

Basic Course Information

Semester:	Spring 2024	Instructor Name:	Dr. Alto Benedicto
Course Title & #:	Chemistry 206	Email:	alto.benedicto@imperial.edu
CRN #:	20539	Webpage:	N/A
Classroom:	2726 (Lec); 2715 (Lab)	Office #:	2779
Class Dates:	Feb 12 to Jun 8, 2024	Office Hours:	MTWTh 6:30 am – 7:30 am Zoom
Class Days:	MW	Office Phone #:	(760) 355-5751
Class Times:	4:45 pm – 6:10 pm MW (Lec); 6:30 pm – 9:40 pm MW (Lab)	Emergency Contact:	Dept. Secretary (760) 355-6155
Units	5	Class Format:	face-to-face (in-person)

Course Description

This course is a study of various reactions and properties aldehydes, ketones, carboxylic acids, aromatic compounds, amines, conjugated dienes, lipids, carbohydrates, and organic polymers. A survey of various biochemical topics such as metabolism, protein structure, and DNA is also included. This course is a continuation of CHEM 204 and is intended for students majoring in chemistry, biology, and pre-medical sciences. (CSU, UC)

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. Solve chemical problems using modern atomic theory (ISLO 2, ISLO 4)
2. Perform chemical experiments in a scientific manner, using proper techniques, analysis, and safety equipment. (ISLO 2, ISLO3, ISLO4)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. demonstrate knowledge of the structure and reactions of aldehydes and ketones.
2. demonstrate knowledge of the structure and reactions of carboxylic acids and their derivatives.
3. demonstrate knowledge of enolate anions and enamines.
4. demonstrate knowledge of the structure and reactions of aromatic compounds.
5. demonstrate knowledge of the structure and reactions of amines.
6. demonstrate knowledge of the structure and reactions of conjugated dienes.
7. demonstrate knowledge of organic polymers.
8. demonstrate knowledge of the structure and reactions carbohydrates.
9. demonstrate knowledge of lipids.
10. demonstrate knowledge of the chemistry of metabolism.

11. demonstrate knowledge of the structure and reactions of amino acids and proteins.
12. demonstrate knowledge of nucleic acids and DNA.

Textbooks & Other Resources or Links

REQUIRED MATERIALS:

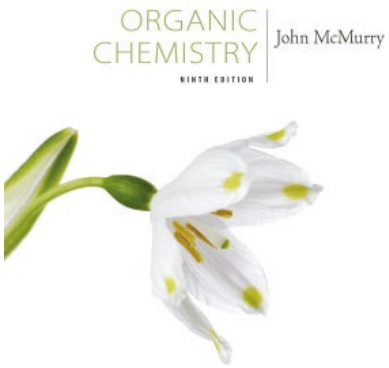

Figure 1: Organic Chemistry book by John McMurry, 9th edition

1. *Organic Chemistry*, by John McMurry. Cengage Learning, 9th Ed, **ISBN**: 9781337158459
   NOTE: There is SHORTENED ONLINE version at
   https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Map%3A_Organic_Chemistry_(McMurry)
2. Enroll into OWL2 via Canvas.
3. Select Experiments in *A Small Scale Approach to Organic Laboratory Techniques*, by Donald Pavia, G. Lampman et al. (Cengage Learning, 3rd edition or latest) (See last page of Syllabus for list of experiments)
4. *Chemistry 206 Lecture and Lab Notes**, by Alto Benedicto.
5. Research Lab Notebook* (9 x 11, Hardbound, numbered pages, non-spiral permanent bound, graphed or lined pages).
6. Chemistry Laboratory Coat* (white, long sleeve, knee length)
7. ~~Seven (7) Scantron Sheets Form No. 882-E (submitted on the second day of class) and pencil~~
8. safety goggles* ($5; needed on second class day), non-programmable scientific calculator ($15 - $25), close-toed shoes.
9. free access to "Online Tutoring" (online tutoring with a live person) via Canvas

* Available at **IVC Chemistry/STEM Club.**

RECOMMENDED MATERIALS:

1. *Study Guide with Student Solutions Manual for McMurry's Organic Chemistry*, 9th Edition. (Amazon Rent: $18.34)
2. ~~*Odyssey Molecular Explorer (Student Edition),* by Wavefunction, Inc. (Molecular Modeling software)~~
3. Molecular Models* (*HGS Maruzen* Organic Chem Kit #1003A $32+tax)

Course Requirements and Instructional Methods

1. Attendance for the entire class period is mandatory for Chem 206 Lab Classes. A Lab roll call will be initiated by the instructor within the first 5 minutes of Lab class. If you are sent out during class (e.g., failure to comply with safety rules such as wearing Safety Goggles, etc.), you will be marked absent for that Lab, and will garner zero points for the experiment.
2. There are **no make-up Exams or Lab Classes**. A score of **zero (0)** will be recorded unless the absence is attributed to representation of official college functions. It is the student's responsibility to show proof of such function **prior** to the date of absence.
3. During the Exam, the only things allowed are: **pencil, nonprogrammable calculator, and I.D.** ~~You will be supplied with a Scantron. You may use the Exam Questionnaire as scratch paper. The Exam Questionnaire, and Scantron are to be submitted at the end of the Exam.~~ **Possession of electronic devices (phones, iPad, programmable calculator, etc.) during Exam is considered cheating** and will be dealt with according to IVC policy.
4. Each student is REQUIRED to have access to the **Chem 206 textbook** and to **sign up for online HW (OWLv2) no later than the second week of class**. Personal laptops are highly encouraged for online HW during Lab Class.
5. **Due dates for Online Chapter HWs are found in the Class Schedule of Topics (see last page).**
6. **Due dates for Quizzes are found in the Class Schedule of Topics (see last page).**
7. **Due dates for Pre-lab HW and Lab Simulations are found in the Class Schedule of Topics (see last page).**
8. **Due dates for Worksheets are found in the Class Schedule of Topics (see last page).**
9. Prior to start of Lab Class, students are to fill out the Lab Notebook with INK with the following **Prelab Information**: **Date, Descriptive Title, Chemical Equation, Side Reactions, Table of Physical Constants, Calculations, Illustration of Apparatus Setup, Outline of Procedure**. Submit the notebook **within the first two minutes of class** for full pre-lab credit, therefore, don't be late!!! At times, Prelab quiz on said experiment will be given prior to start of the experiment.
10. Before leaving the Lab Class, make sure the **instructor has signed** your Lab Notebook. Cross-out mistakes with a single strike-through line. Use appropriate verb tense. Cross out large blank areas in the notebook. Sign and date your notebook. **A Lab Notebook (containing Graphs, Spectroscopic Data, % Yield, etc. as need be) with answers to Post-Lab Questions is to be submitted within the first two minutes of the next time Lab meeting**.
11. Products obtained from Labs must be submitted in a vial with the following information: **Your Name, Name of Compound, melting point and other relevant data, purity, yield in grams**. Points will be subtracted for missing information.
12. Lab clean-ups are done 15 minutes before the end of lab. A **wet towel** should be used to wipe the lab bench to gain full points. Make sure the sink and work area is clean. Points will be deducted to the entire class if the common work areas (fume hood, analytical balances) are dirty.
13. There is no bonus work available. Kindly seek assistance immediately to clarify any questions.
14. Keep up with the chapter readings. Seek help immediately on unclear concepts.
15. If this is an online class, then the **deadlines are fixed**. Exams may be taken ahead of time but never after. Two choices to take Exam ahead of time: Choice A (12 hours ahead) and Choice B (24 hours ahead). Inform the instructor at least 24 hours of the new time, e.g., if Choice B, then inform instructor 48 hours ahead.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

Assessment Type	How many	Total Points
Lecture Exams	5 @ 60	300 pts
Lecture Final Exam	1 @ 150	150 pts
Quizzes	14 @ 10 1 @ 15	155 pts
Online Homework	10 @ 10 3 @ 5	115 pts
Worksheets	5 @ 10 1 @ 20	70 pts
Pre-lab HW	6 @ 10	60 pts
Lab Experiments Write-up and Typed Paper (for Lab 4)	9 @ 20 1 @ 20	180 pts 20 pts
Labster Simulations	11 @ 10	110 pts
Lab Final Exam	1 @ 100	100 pts

OVERALL POINTS = 1,260 pts

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Grading Scale Percentage	Letter Grade
85.00% to 100 %	A
75.00% to 84.99%	B
60.00% to 74.99%	C
50.00% to 59.99%	D

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. **A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped**. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.
- **Absences during Lab Classes, or leaving during Lab Classes** automatically result in a **grade of zero (0) for the Lab Experiment.**

Academic Honesty

- IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and

academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment;(c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit http://www.imperial.edu/studentresources or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar *****Tentative, subject to change without prior notice*****

Quizzes (designated as Quiz) are due every Tuesday at 11:55 pm
Pre-lab HW (designated as Pre-lab) and Labster are due every Thursday at 11:55 pm
Online Chapter HW (designated as HW) are due every Saturday at 11:55 pm

WK	DATE	CHAPTER READINGS	LABORATORY **Worksheets due Wed 4:45 pm** **Lec Exams on Wed 7 pm – 9 pm**	**Due dates**
1	Feb 12 – Feb 17	Review: Chap 17 and 18; Alcohols, Thiols, Sulfides	Safety Video; Locker Check-in;	*Pre-lab A;* *HW17+;*
2	Feb 19 – Feb 24	Ch 15: Benzene and Aromaticity	Lab 1: Diels-Alder Reaction (Expt 51A) *Worksheet 1*	*Quiz 17+;* *Pre-lab B;* *HW15*
3	Feb 26 – Mar 2	Ch 16: Benzene Derivatives: Electrophilic Aromatic Substitution	Lab 2: Esterification of Diels-Alder Adduct (Expt 51B)	*Quiz 15;* *Pre-lab C;* *HW16*
4	Mar 4 – Mar 9	Ch 19: Aldehydes and Ketones: Nucleophilic Addition Reactions	Worksheet 2 **Lec Exam 1** (incl. Ch 15,16,17,18)	*Quiz 16;* *Pre-lab D;* *HW19*
5	Mar 11 – Mar 16	Ch 20: Carboxylic Acids and Nitriles	Lab 3: Polymer Synthesis through ROMP (Expt 51C)	*Quiz 19;;* *Pre-lab E;* *HW20*
6	Mar 18 – Mar 23	Ch 21: Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution.	Lab 5: Relative Reactivities of Aromatic Compounds (Expt 42)	*Quiz 20;* *Pre-lab F;* *HW21*
7	Mar 25 – Mar 30	Ch 22: Carbonyl Alpha-Substitution Reactions	Worksheet 3 **Lec Exam 2** (covers Ch 18,19,20,21)	*Quiz 21;* *Typed Paper (due Wed 4:50 pm)* *HW22*
8	Apr 1 – Apr 6	*Spring Break*	*Spring Break*	*Labster1 (Molecular Resonance)*

WK	DATE	CHAPTER READINGS	LABORATORY **Worksheets due Wed 4:45 pm** **Lec Exams on Wed 7 pm – 9 pm**	**Due dates**
9	Apr 8 – Apr 13	Ch 23: Carbonyl Condensation Reactions	Lab 6: Preparation of Soap from 70% Lard and 30% Coconut Oil (Expt 24A);	*Quiz 22;* *Labster2 (Ion Exchange Chrom)* *HW 23*
10	Apr 15 – Apr 20	Con't of Ch 23 and Ch 12: Mass Spectrometry	Worksheet 4 Lab 7: Biodiesel from Coconut Oil (Expt 26A and 26C)	*Quiz 23;* *Labster3 (IR Spectroscopy)* *HW12+*
11	Apr 22 – Apr 27	Ch 24: Amines and Heterocycles	Worksheet 5 **Lec Exam 3** (covers Ch 22, 23, 24)	*Quiz 12+* *Labster4 (Proton NMR)* *HW24*
12	Apr 29 – May 4	Ch 25: Carbohydrates	Lab 8: Molecular Modeling using Computers; GC-MS Spectra	*Quiz 24* *Labster5 (Carbon NMR)* *HW25*
13	May 6 – May 11	Ch 26: Amino Acids, Peptides, and Proteins; Ch 27: Lipids	Lab 9: Functional Group Tests (Expt 58A; 58D; Tollens & Iodoform Test)	*Quiz 25;* *Labster6 (Functional Group Tests)* *HW26+*
14	May 13 – May 18	Ch 28: Nucleic Acids Ch 29: Metabolic Pathways	Worksheet 6 **Lec Exam 4** (covers Ch 25, 26, 27)	*Quiz 26+;* *Labster7 (Mass Spectrometry)* *HW28+*
15	May 20 – May 25	Ch 30: Pericyclic Reactions	Lab 10: Identification of Unknowns	*Quiz 28;* *Labster8 (ID of Org Cpd by Spect);* *Labster9 (Size-Exclusion Chrom)*
16	May 27 – Jun 1	Ch 31: Synthetic Polymers	Locker Checkout **;** **Lec Exam 5** (covers Ch 28, 29, 30, 31)	*Quiz 30+;* *Labster10 (UV-Vis Spect)* *Labster11 (TLC)*
17	Jun 3 – Jun 7	**LAB FINAL (Mon; 2 hr; 7 pm – 9 pm)**	**Lec Final Exam** (Wed; 2.5 hours; **6:30 pm – 9 pm**)	

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