Chemistry 204 (Organic Chemistry) Syllabus and Schedule

Basic Course Information

Semester:	Fall 2023	Instructor Name:	Dr. Alto Benedicto
Course Title & #:	Chemistry 204	Email:	alto.benedicto@imperial.edu
CRN #:	10519	Webpage:	N/A
Classroom:	2723 (Lec); 2715 (Lab)	Office #:	2779
Class Dates:	Aug 14 to Dec 9, 2023	Office Hours:	MTWTh 6:30 am – 7:30 am Zoom
Class Days:	MW	Office Phone #:	(760) 355-5751
Class Times:	4:55 – 6:20 pm (Lec) MW; 6:30 – 9:40 pm (Lab) MW	Emergency Contact:	Dept. Secretary (760) 355-6155
Units	5	Class Format:	face-to-face (onground)

Course Description

This course is a study of various reaction mechanisms and properties of hydrocarbons, alkyl halides, alcohols, thiols, and ethers. Stereochemical properties of compounds are investigated and related to structure and observed reactions. Instrumental methods of analysis such as IR, UV-VIS, NMR, and mass spectrometry are discussed. This course is intended for students majoring in chemistry, biology, and pre-medical sciences. (C-ID: CHEM 150; C-ID: CHEM 160 S with CHEM 206) (CSU, UC).

Course Prerequisite(s) and/or Corequisite(s)

Chem 200 with a grade of "C" or better.

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 covalent bonding and molecular geometry.
2. describe structure and reactions of alkanes and cycloalkanes.
3. demonstrate knowledge of organic acids and bases.

4. demonstrate knowledge of stereochemistry and its effects of molecular properties.
5. demonstrate knowledge of the structure and reactions of alkenes.
6. demonstrate knowledge of alkyl halides and radical reactions.
7. demonstrate knowledge of nucleophilic substitution and beta elimination.
8. demonstrate knowledge of the structure and reactions of alcohols and thiols.
9. demonstrate knowledge of the structure and reactions of alkynes.
10. demonstrate knowledge of the structure and reactions of ethers, sulfides, and epoxides.
11. identify organic molecules using various instrumental methods such as mass spectrometry and nuclear magnetic resonance spectrometry (NMR) as well as infrared (IR) and UV-Visible spectroscopy.

Textbooks & Other Resources or Links

REQUIRED MATERIALS:

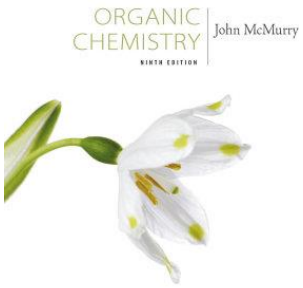

Figure 1: Organic Chemistry book by John McMurry, 9th edition

1. *Organic Chemistry*, by John McMurry. Cengage Learning, 9th Ed, **ISBN**: 9781337158459 (see #2 on how to purchase)
2. Registration with Cengage (OWLv2) for online HW. See Canvas left hand margin for Cengage or see Instructor for details on first day of class. This registration should include the following: *OWL2 online HW, LabSkills prelab*, digital copy of *Organic Chemistry*, by John McMurry of the book.
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 204 Lecture and Lab Notes**, by Alto Benedicto.
5. **Molecular Models* (*HGS Maruzen* Organic Chem Kit #1003A approximately $32+tax)**
6. Research Lab Notebook* (9 x 11, Hardbound, numbered pages, non-spiral permanent bound, graphed or lined pages).
7. Chemistry Laboratory Coat* (white, long sleeve, knee length)
8. Eight (8) Scantron Sheets Form No. 889-E (submitted on the second day of class) and pencil
9. safety goggles* ($5; needed on second class day), non-programmable scientific calculator ($15 - $25), close-toed shoes.

* 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)

Course Requirements and Instructional Methods

1. Attendance for the entire class period is mandatory for Chem 204 ~~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 obey safety rules such as wearing Safety Goggles, etc.), you will be marked absent~~.~~
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, ipod, programmable calculator, etc.) during Exam is considered cheating** and will be dealt with according to IVC policy.
4. Each student is REQUIRED to **buy the Chem 204 textbook** and to **sign up for online HW (OWLv2 and LabSkills) no later than the second week of class**. Personal laptop is 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 Reading HW are found in the Class Schedule of Topics (see last page).**
8. 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.
9. 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. **Notebook (containing Graphs, Spectroscopic Data, % Yield, etc. as need be) with answer to Post-Lab Questions is to be submitted within the first two minutes of the next time Lab meeting**.
10. 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.
11. Lab clean-ups are done 15 minutes before the end of lab. A **wet towel** should be used to wipe the lab bench in order to gain full points. Make sure 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.
12. There are no bonus work available. Kindly seek assistance immediately to clarify any questions.
13. Keep up with the chapter readings. Seek help immediately on unclear concepts.

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	3 @ 12 12 @ 8 1 @ 4	136 pts
Online Homework	3 @ 12 8 @ 8 5 @ 4	120 pts
OWL Pre-lab	6 @ 10	60 pts
Lab Expts (Lab 1 to 9, except 4) and Typewritten Paper for Lab 4	8 @ 20 1 @ 30	160 pts 30 pts
Labster Simulations	14 @ 10 1 @ 4	140 pts 4 pts
Lab Midterm Exam	1 @ 50	50 pts
Lab Final Exam	1 @ 100	100 pts

OVERALL POINTS = 1,250 pts

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

Course Policies

- 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.

TUTORING RESOURCES

1) Our Class Tutor is _____ (Zoom ID 930 5535 9930—ask for _____). Tutoring Times are: _____
2) My Tutoring Hours: MTWTh 6:30 am – 7:30 am. (Zoom link in Canvas Announcement)
3) ***Online Tutoring*** in left margin of Canvas seven days a week allows you to access live tutoring from State of California

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

WK	DATE	CHAPTER READINGS	Quiz due **Tu** 11:55 pm) OWL Pre-Lab due **Th** 11:55 pm Sim Labster due **Fri** 11:55 pm) HW due **Sat** 11:55 pm)	**Lec Exam Wed 7 pm – 9 pm**
1	Aug 14 – 19	Ch 1: Hybridization, Skeletal Structures	Sim Labster 00: Chem Safety Sim Labster 01: Melting Point *HW1*	IVC Safety Quiz (Webstar; no points) Pre-Lab Notebook writeup for Lab 1 Lab 1: Synthesis of Aspirin
2	Aug 21 – 26	Ch 2: Resonance, Acid Strengths	*Quiz 1;* *OWL Pre-lab A;* Sim 02: Recrystallization Sim 03: Aspirin Synthesis *HW2*	(con't of Lab 1; m.p. of aspirin)
3	Aug 28 – Sep 2	Ch 3: Alkane Nomenclature	*Quiz 2;* *OWL Pre-lab B;* Sim 04: Liq-Liq Extraction *HW3*	Lab 3: Separation of a Mixture by Simple & Fractional Distillation
4	Sep 4 – 9	Ch 4: Alkane/Cycloalkane Conformations	*Quiz 3;* Sim 05: Fractional Distillation *HW4*	(HOLIDAY on Sep 4 Monday) **Lec Exam 1** (covers Ch 1,2,3)
5	Sep 11 – 16	Ch 5: Stereoisomers, Chirality	*Quiz 4;* *OWL Pre-lab C;* *HW5*	Lab 2: Molecular Modeling using Physical Models and Computers

WK	DATE	CHAPTER READINGS	Quiz due **Tu** 11:55 pm) OWL Pre-Lab due **Th** 11:55 pm Sim Labster due **Fri** 11:55 pm) HW due **Sat** 11:55 pm)	**Lec Exam Wed 7 pm – 9 pm**
6	Sep 18 – 23	Ch 6: General Rxn Mechanisms and Symbols	*Quiz 5;* *OWL Pre-lab D;* *HW6*	Lab 4: Synthesis of Banana Oil; IR Banana Oil
7	Sep 25 – 30	Ch 7: Alkene Names & Stability	*Quiz 6;* Sim 06: HPLC (Reverse Phase LC *HW7*	(con't of Lab 4) **Lec Exam 2** (covers Ch 4, 5, 6)
8	Oct 2 – Oct 7	Ch 8: Alkene Reactions and Synthesis	*Quiz 7;* *OWL Pre-lab E;* *HW8*	Lab 5: Isolation of Caffeine from Tea Leaves **Typewritten Paper for Lab 4 due**
9	Oct 9 – Oct 14	Ch 9: Alkyne Rxn and Synthesis	*Quiz 8;* *OWL Pre-lab F;* *HW9*	(con't of Lab 5) **Lab Midterm Exam (7 – 8:15 pm)**
10	Oct 16 – Oct 21	Ch 10: Alkyl Halides	*Quiz 9;* Sim 07: Thin-Layer Chrom *HW10*	Lab 6: Isolation of Leaf Pigments through Chromatography **Lec Exam 3 (covers Ch 7,8,9)**
11	Oct 23 – Oct 28	Ch 11: S_N2, S_N1, E2, E1 reactions	*Quiz 10;* Sim 08: Size Exclusion Chrom Sim 09: Substitution vs Elimination *HW11*	Lab 7: Dehydration of 2- and 4-Methylcyclohexanol; GC Chrom
12	Oct 30 – Nov 4	Ch 12: IR Spect (omit Mass Spectometry); Ch 13: NMR Spect	*Quiz 11;* Sim 10: Infrared Spectroscopy *HW13*	Lab 8: Isolation of Eugenol from Cloves
13	Nov 6 – Nov 11	Ch 14 Conjugated Dienes, and UV Spectroscopy	*Quiz 13;* Sim 11: Nucl Magnetic Resonance Sim 12: Proton NMR *HW14*	(con't of Lab 8) **Lec Exam 4** (covers Ch 10, 11, 12)
14	Nov 13 – Nov 18	Ch 17: Alcohols and Phenols	*Quiz 14;* Sim 13: Carbon NMR *HW17*	Lab 9: IR and NMR problems; Identification of Unknowns
15	Nov 20 – Nov 25	*Thanksgiving Break*	*Quiz 12;* *HW12*	*Thanksgiving Break*
16	Nov 27 – Dec 2	Ch 18: Ethers and Epoxides	*Quiz 17;* *Sim 14: (Identification of Org Cpd by Spectroscopy)* HW 18	**Lec Exam 5** (covers Ch 13, 14, 17)
17	Dec 4 – Dec 8	**Lab Final Exam** on Mon 7:00 pm -9:00 pm	*Quiz 18*	**LEC FINAL EXAM** on Wed 7:00 pm-9:30 pm

Quizzes (designated as <u>Quiz</u>) are due every Tuesday at 11:55 pm
OWL Pre-lab Reading HW (designated as <u>Pre-lab</u>) are due every Thursday at 11:55 pm
Sim Labster are due every Friday at 11:55 pm
Online Chapter HW (designated as <u>HW</u>) are due every Saturday at 11:55 pm