

CHEM 12A: Organic Chemistry**Syllabus**

Instructor: John Saunders, MS
 Email: saundersjohn@fhda.edu
 Office Hours: Tu/Th 2:30-3:30, 5-5:30
 Office:

Labs:	Rm: SC 2210	Tu/Th	11:30-2:20pm	36131
Lectures:	Rm: S 35	Tu/Th	3:30-4:45pm	

Pre-requisites:

CHEM 1C with a grade of C or better.

Course Description

An introduction to the physical properties and chemical behavior of important classes of organic compounds, focusing on hydrocarbons and haloalkanes. Emphasis on retrosynthesis, spectroscopic structure determination, and reaction mechanism. Laboratory experiments involving the synthesis of simple compounds and the characterization of those compounds using gas chromatography (GC), and infrared (IR) and nuclear magnetic resonance (NMR) spectroscopy. For chemistry majors or those in closely allied fields such as biochemistry and chemical engineering.

Required Materials:

- Textbook: Klein, *Organic Chemistry, 3rd Ed.*
- Lab Manual: Gilbert and Martin, *Experimental Organic Chemistry: A Miniscale and Microscale Approach, 6th Ed.*
- Lab Notebook: a carbon copy notebook should be available at the bookstore, you must have the ability to remove carbon copies from your notebook to turn in to the professor
- Calculator: scientific with log functions, not your cell phone
- Safety goggles: to be worn each lab period
- Disposable gloves: neoprene or nitrile, **NO LATEX**

Recommended Materials:

- Solutions Manual: Klein, *Student Study Guide and Solutions Manual, 3rd Ed for Organic Chemistry, 3rd Ed.*
- Molecular Modeling Kit: any standard kit at the bookstore or online
- Lab Coat

Attendance:

ALL LABS AND EXAMS ARE MANDATORY, any anticipated or emergency absences must be discussed with the professor prior to the missed lab or exam. In order to pass the course, must be present for all of **EXAMS** unless prior arrangements for a make-up are discussed. You may miss 1 **LAB** and still pass, however it will negatively impact your grade. Missing a second lab and you cannot pass the course with a C or better. Arriving later than 15 minutes to lab will count as an absence without prior notification (email if there is an emergency).

Class Conduct

- Arrive to lab and lectures on time or early.
- Do not disrupt class by talking or texting others.
- During lab, **NO ELECTRONIC DEVICES** are allowed except a calculator. You may ask to take pictures of experiments, but if your phone is out, you will lose points from your Lab Conduct grade.
- No use of headphones in lab ever. It is a safety hazard.
- No eating or drinking in lab. Again, another safety hazard.

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- Always wear lab goggles during wet chemistry labs. Wear them until the instructor says otherwise.

Grades:

Your grade will be based on several parts and divided as shown to the right:

- Quizzes – short quizzes will be given randomly during lecture. These should be viewed as more of a knowledge check, they will not be graded difficultly, but rather used to see how well students are prepared for the exams and understanding the course material. They are also an attendance check.
- Lab Conduct – essentially easy points, this is a measure of how much you learn about the laboratory setting and safety related techniques. This will include observations of your punctuality, preparation, safety, cleanliness, and wearing PPE (gloves and goggles) appropriately.
- Labs – this will include all work for any labs conducted. Your grade will be based on pre-labs, in-lab notes, and lab reports. The Pre-Labs will be collected at the start of each lab by turning in carbon copies of your notebook. The Lab Reports will include carbon copies of the in-lab work as well as any post lab questions. Further details can be found on Canvas.
- Lab Exam – the exam will cover all labs conducted and focus on the techniques and underlying theory of each lab rather than specific procedural details. For instance, understanding why steps are needed in the procedure would be acceptable rather than remembering which step occurs when. It is open lab notebook.
- Exams – there will be 2 exams throughout the quarter. Each exam will be strictly based on the chapters covered, however you should continue to keep up on old material as it all compounds for the final. There will be in-class reviews for each exam, you should come prepared with questions regarding the exam.
- Final Exam – this exam will focus on the material taught since the second exam, but will also cover material from the first two exams. Organic chemistry is best thought of as a toolbox to tackle problems with, and as you progress through the series, that toolbox will grow, but you always come back to the earliest tools.

Quizzes	50
Lab Conduct	50
Labs	100
Lab Exam	100
Exams	400
Final Exam	300
Total	1000

Late Submission Policy

- Turned in within 24 hour deadline → 5% off
- Turned in 24 hours to 7 days later → 10% off per day late (up to 60% off total on day 7)
- Turned in passed 7 days after due date → no credit, but for lab assignments, you must submit all that you attended to receive a passing grade.

Students with Disabilities

Students who are seeking support from the Disability Support Programs and Services (DSPS) should contact them directly at their office in LCW 110 or at (408) 864-8839 or via www.deanza.edu/dsps. De Anza College has the policy to accommodate all individuals regardless of disabilities, as such any students are welcome to come and speak with me privately regarding any accommodations necessary. They should email me directly and we can meet, please plan to bring your Accommodation Memo from the DSPS. Anything discussed will be kept in strict confidence and will not influence or affect your grade.

Academic Integrity

Academic integrity is a very serious thing. Cheating, copying, plagiarizing, or any form of using other person's work as your own is a serious offense. For more details about De Anza college's Academic Integrity policy go to <http://www.deanza.edu/studenthandbook/academic-integrity.html> to view. Any instance of academic dishonesty will not be tolerated and said students will receive an F in the course.

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This course is an upper level chemistry course that entails a lot of new vocabulary and concepts. This will not be the same as other courses you've taken. In particular, **you are encouraged to form a study group** with some peers to study together. In order to do well in organic chemistry, I advise a variety of methods to study:

- Read ahead in the textbook
- Complete homework problems (first with help if need be, second without help)
- Complete lab assignments
- Flashcards and study group work to teach each other (the best way to see if you know something, is if you can teach it to someone else)
- Attend lecture actively

Academic Calendar Dates:

January 7 th	First day of classes
January 19 th	Last day to add classes for winter quarter
January 20 th	Last day to drop classes with no record of "W"
February 1 st	Last day to request "Pass/No Pass" for winter quarter
March 1 st	Last day to drop with a "W"
March 25-29	Final Exams

Lab Assignments:

<u>Lab</u>	<u>Procedure pages</u>	<u>Theory pages</u>
1) Acid-Base Extraction	163-166, 99-104	155-163, 91-99 (recrystallization)
2) TLC	185-186	179-184
3) Nucleophilic Substitutions	473-474	471-473, 125-145, 235-254
4) Dehydration of Alcohols	347-348	342-346, 196-206, 235-254, 258-278
5) Alkyl Halides	Handout	
6) Bromination	372-375, 235-254, 258-278	235-254, 258-278

Schedule: (subject to change)

<u>Tuesday</u>			<u>Thursday</u>		
Date	Lecture	Lab	Date	Lecture	Lab
1/8	Ch 1	Intro	1/10	Ch 1 Ch 2	1) Acid-Base Extraction: Pt B
1/15	Ch 2 Ch 3	1) Acid-Base Extraction: Pt C	1/17	Ch 3	1) Acid-Base Extractions: Recrystallization
1/22	Ch 4	1) Acid-Base Extraction: Melting Point	1/24	Ch 4	Intro to TLC and IR
1/29	Ch 5	2) TLC: Plate Prep	1/31	Review for Exam 1	2) TLC: Plate Development

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2/5	Exam 1	3) Nucleophilic Substitution: synthesis	2/7	Ch 6	3) Nucleophilic Substitution: distillation
2/12	Ch 6	3) Nucleophilic Substitution: IR	2/14	Ch 7	Intro to NMR
2/19	Ch 7	4) Dehydration of Alcohols: synthesis	2/21	Ch 10	4) Dehydration of Alcohols: GC
2/26	Ch 10	4) Dehydration of Alcohols: IR	2/28	Review for Exam 2	4) Dehydration of Alcohols: NMR
3/5	Exam 2	5) Reactivity of Alkyl Halides	3/7	Ch 8	6) Bromination of (E)-Stilbene: synthesis
3/12	Ch 8	6) Bromination of (E)-Stilbene: IR	3/14	Ch 9	6) Bromination of (E)-Stilbene: NMR
3/19	Ch 9	Lab Exam Check-out	3/21	Review for Final Exam	
3/26	Final Exam (4-6pm)				

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Student Learning Outcome(s):

- *Predict the product of a chemical reaction.
- *Apply principles of thermodynamics, kinetics, and equilibrium to organic reaction systems.
- *Generate logical stepwise reaction mechanisms.
- *Construct molecular structure from spectroscopic data.