

CHEM 12B Course Outline as of Fall 2000**CATALOG INFORMATION**

Dept and Nbr: CHEM 12B Title: ORGANIC CHEMISTRY

Full Title: Organic Chemistry

Last Reviewed: 1/27/2020

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	5.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	5.00	Lab Scheduled	6.00	17.5	Lab Scheduled	105.00
		Contact DHR	0		Contact DHR	0
		Contact Total	9.00		Contact Total	157.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 262.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

Catalog Description:

The second semester of an intensive one-year program based upon modern theoretical concepts of organic chemistry. All aspects of fundamental organic chemistry are studied, including nomenclature, chemical and physical properties, reactions and synthesis. The study includes theoretical aspects, reaction mechanisms, and multistep synthesis. The laboratory includes methods of purifying solids and liquids, determination of physical properties of organic compounds, isolation of natural products, synthetic reactions, chromatographic separations, and structure determination using infrared and nuclear magnetic resonance spectroscopy and gas chromatography/mass spectrometry. Chem 12A-12B is equivalent to Chem 112A-112B at University of California, Berkeley or Chem 128A, 128B, 128C, 129A, 129B, 129C at University of California, Davis. Transfer students are expected to complete this sequence prior to their junior year.

Prerequisites/Corequisites:

Chem 12A.

Recommended Preparation:**Limits on Enrollment:**

Schedule of Classes Information:

Description: Second semester of a one year program based upon modern theoretical concepts of organic chemistry. (Grade Only)

Prerequisites/Corequisites: Chem 12A.

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area	Effective:	Inactive:
CSU GE:	Transfer Area	Effective:	Inactive:
	B1	Physical Science	Spring 2000
	B3	Laboratory Activity	

IGETC:	Transfer Area	Effective:	Inactive:
	5A	Physical Sciences	Spring 2007
	5C	Fulfills Lab Requirement	

CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:
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UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:
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CID:

CID Descriptor:CHEM 160S Organic Chemistry for Science Majors Sequence A

SRJC Equivalent Course(s): CHEM12A AND CHEM12B

Certificate/Major Applicable:

Not Certificate/Major Applicable

COURSE CONTENT**Outcomes and Objectives:**

A successful student in Chemistry 12B should be able to:

1. use molecular orbital theory to predict outcomes of chemical reactions.
2. predict the products of reactions involving organic compounds.
3. be able to develop a multistep (4-6 steps) synthesis for reasonably complex compounds, using available starting materials.
4. write logical mechanisms for more complex organic reactions.
5. apply oxidation-reduction theory to organic compounds.
6. effectively communicate observations and subsequent conclusions by means of written laboratory reports. Follow the accepted standards for writing technical papers.
7. research primary and secondary literature, and use the computer resources for the construction of written reports
8. perform multistep (3-4 steps) syntheses in the laboratory.
9. purify and identify (GC/MS, NMR, IR) a variety of simple organic compounds in the laboratory.

Topics and Scope:

LECTURE MATERIAL

1. Reactions of Aromatic Compounds
2. Aldehydes and Ketones
3. Enols and Enolates
4. Carboxylic Acids and Their Derivatives
5. Beta-Dicarbonyl Compounds
6. Amines
7. Heterocyclic Compounds
8. Phenols and Aryl Halides
9. Carbohydrates
10. Lipids
11. Amino Acids and Proteins
12. Nucleic Acids

LABORATORY MATERIAL

1. Mass Spectrometry
2. NMR and IR Spectroscopy
3. Organic Synthesis
4. Multistep Organic Synthesis

Assignment:

Assignments for Chemistry 12B include:

1. Specific reading and study assignments (averaging 40-50 pages per week).
2. Completion of end-of-chapter exercises (averaging 25-30 problems per week).
3. Writing (on average) one laboratory report per week and previewing upcoming laboratory experiments and completion of the required pre-laboratory assignment.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework, Lab reports, Essay exams
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Writing 20 - 60%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Lab reports, Exams

Problem solving 5 - 10%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, LAB SKILL EVAL, PARTICIPATION	Skill Demonstrations 1 - 5%
Exams: All forms of formal testing, other than skill performance exams.	
PROBLEM SOLVING & SHORT ESSAY	Exams 30 - 75%
Other: Includes any assessment tools that do not logically fit into the above categories.	
None	Other Category 0 - 0%

Representative Textbooks and Materials:

LECTURE:

ORGANIC CHEMISTRY, M. Jones Jr., N.W. Norton and Company, 1997

ORGANIC CHEMISTRY, 6th Edition, Solomons, Wiley, 1996

INTRODUCTION TO ORGANIC CHEMISTRY, 4th Edition, Streitweiser, Heathcock,
and Kosower, MacMillan, 1992

ORGANIC CHEMISTRY, 4th Edition, Wade, Prentice Hall, 1999

LABORATORY:

INTRODUCTION TO ORGANIC LABORATORY TECHNIQUES: A MICROSCALE
APPROACH: 3rd

Edition, Pavia, Lampman, Kriz, and Engel, Saunders, 1999

EXPERIMENTAL ORGANIC CHEMISTRY: A MINISCALE APPROACH, Roberts, Gilbert,
and Martin, Saunders, 1994