

CHEM 6B: INTRODUCTION TO ORGANIC AND BIOLOGICAL CHEMISTRY

In Workflow

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Approval Path

1. Tue, 19 Nov 2019 22:30:00 GMT
Benjamin Gherman (ghermanb): Rollback to Initiator
2. Wed, 20 Nov 2019 17:49:11 GMT
Benjamin Gherman (ghermanb): Approved for CHEM Committee Chair
3. Tue, 25 Feb 2020 22:06:55 GMT
Roy Dixon (rdixon): Approved for CHEM Chair
4. Wed, 04 Mar 2020 23:21:54 GMT
Thomas Krabacher (tsk): Rollback to CHEM Chair for NSM College Committee Chair
5. Wed, 28 Oct 2020 22:58:00 GMT
Roy Dixon (rdixon): Approved for CHEM Chair
6. Wed, 04 Nov 2020 23:13:32 GMT
Thomas Krabacher (tsk): Approved for NSM College Committee Chair
7. Fri, 22 Jan 2021 19:34:43 GMT
Shannon Datwyler (datwyler): Approved for NSM Dean

Date Submitted: Wed, 20 Nov 2019 01:00:14 GMT

Viewing: CHEM 6B : Introduction to Organic and Biological Chemistry

Last edit: Wed, 28 Oct 2020 22:57:08 GMT

Changes proposed by: Roy Dixon (101029561)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
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Catalog Title:

Introduction to Organic and Biological Chemistry

Class Schedule Title:

Intro Organic+Biol Chem

Academic Group: (College)

NSM - Natural Sciences & Mathematics

Academic Organization: (Department)

Chemistry

Will this course be offered through the College of Continuing Education (CCE)?

No

Catalog Year Effective:

Spring 2021 (2021/2022 Catalog)

Subject Area: (prefix)

CHEM - Chemistry

Catalog Number: (course number)

6B

Course ID: (For administrative use only.)

108621

Units:

5

In what term(s) will this course typically be offered?

Fall, Spring

Does this course require a room for its final exam?

Yes, final exam requires a room

Does this course replace an existing experimental course?

No

This course complies with the credit hour policy:

Yes

Justification for course proposal:

Due to a change in requirements for Area B5, this course no longer is an Area B5 course. The main purpose of this proposal is to remove that designation from the catalog. Additionally, minor changes to the course description were made.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)

Introduction to structure and chemical and physical properties of the major classes of organic compounds; introduction to the structure, property and roles of biological polymers such as polysaccharides, proteins (including enzymes) and nucleic acids; introduction to the fundamental metabolic pathways of energy metabolism. Does not fulfill the requirement for more advanced study in chemistry and cannot be counted toward a major or minor in chemistry. Lecture three hours; discussion one hour; laboratory three hours.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Does this course require safety training?

Yes

Does this course require personal protective equipment (PPE)?

Yes

Course Note: (Note must be a single sentence; do not include field trip or fee course notations.)

This course requires personal protective equipment (PPE) and safety training as part of the course occurs in a laboratory.

Does this course have prerequisites?

Yes

Prerequisite:

CHEM 1A or CHEM 6A, or a high school chemistry course and passing a qualifying exam given in the first laboratory period.

Prerequisites Enforced at Registration?

Yes

Does this course have corequisites?

No

Graded:

Letter

Approval required for enrollment?

No Approval Required

Course Component(s) and Classification(s):Discussion
Laboratory
Lecture**Discussion Classification**

CS#04 - Lecture /Recitation (K-factor=1 WTU per unit)

Discussion Units

1

Laboratory Classification

CS#16 - Science Laboratory (K-factor=2 WTU per unit)

Laboratory Units

1

Lecture Classification

CS#01 - Large Lecture (K-factor=1 WTU per unit)

Lecture Units

3

Is this a paired course?

No

Is this course crosslisted?

No

Can this course be repeated for credit?

No

Can the course be taken for credit more than once during the same term?

No

Description of the Expected Learning Outcomes: Describe outcomes using the following format: 'Students will be able to: 1), 2), etc.'

Students will be able to:

1) Describe the structures and properties of organic molecules making up biological systems. Specifically, they should be able to:

a. Recognize the major classes of small organic molecules and biological polymers, including:

- i. Saturated and unsaturated hydrocarbons
- ii. Alcohols, ethers, aldehydes, ketones, carboxylic acids and esters
- iii. Amines and amides
- iv. Thiols, thioethers and thioesters
- v. Amino acids and peptides and proteins
- vi. Sugars and complex carbohydrates
- vii. Fatty acids and complex lipids
- viii. Nucleotides and nucleic acids

b. Demonstrate an understanding of potential spatial arrangements of atoms in organic molecules by using proper nomenclature to give names to organic compounds from drawn structures, and drawing structures from given names.

c. Describe how molecular structure and presence of functional groups affect the physical and chemical properties of organic molecules by predicting the influence of structure and functional groups on the physical properties and chemical reactivity of organic molecules.

d. Demonstrate an understanding of common chemical reactions of simple organic molecules and biological polymers by predicting the products of reactions between molecules, or recognizing the reactants and reactions that generate a reaction product.

2) Describe the structure, role and function of the major biological polymers. Specifically, they should be able to:

- a. Describe the different elements of protein structure.
- b. Describe the role of proteins in biological systems, including describing how proteins act as enzymes to catalyze biological reactions.
- c. Recognize and describe the structure and roles of RNA and B-DNA.

3) Describe the major metabolic processes involved in human energy metabolism. Specifically students should be able to:

- Draw the overall reactions of glycolysis and the citric acid cycle.
- Differentiate between aerobic and anaerobic metabolism.
- Describe the overall role and major components of mitochondrial electron transport and oxidative phosphorylation.
- Draw the overall reaction of beta oxidation and describe how fatty acid metabolism integrates with carbohydrate metabolism.

Attach a list of the required/recommended course readings and activities:

Chem 6B Generic Syllabus_TS.pdf

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

- Mid-term and final exams (typically combination of multiple choice and short-answer questions) are the major tool used to assess the learning outcomes. Early midterms assess learning outcomes 1.a – 1.d, and later midterms and the final exam assess learning outcomes 2.a-2.c and 3.a-3.d. Mid-term assessment may be supplemented by periodic quizzes at the instructor's discretion.
- Laboratory exercises are used to help students achieve all learning objectives, and laboratory reports (approximately weekly) are used to assess the achievement of the learning objective addressed by that laboratory exercise. (Related to learning outcomes 1 to 3, particularly 1a, 1d, and 2b).
- At the instructor's discretion, regular assigned homework problems (either online or hand-written) addressing all learning objectives may be used as one component of overall assessment of student achievement of learning objectives (related to learning objectives 1 to 3 as with the exams).

Is this course required in a degree program (major, minor, graduate degree, certificate?)

Yes

Has a corresponding Program Change been submitted to Workflow?

No

Identify the program(s) in which this course is required:

Programs:

BS in Kinesiology (Exercise Science)

BS in Health Science (Occupational Health and Safety)

BS in Exercise Science

BS in Public Health (Occupational Health and Safety)

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

Will there be any departments affected by this proposed course?

No

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

University Learning Goals

Undergraduate Learning Goals:

Competence in the disciplines

Knowledge of human cultures and the physical and natural world

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

GE Course and GE Goal(s)

Is this a General Education (GE) course or is it being considered for GE?

No

Please attach any additional files not requested above:

Chevelle_Newsome_email.pdf

Reviewer Comments:

Benjamin Gherman (ghermanb) (Tue, 19 Nov 2019 22:30:00 GMT): Rollback: Rolling back to allow for clarification on justification and for minor edits to be made to course description.

Thomas Krabacher (tsk) (Wed, 04 Mar 2020 23:21:54 GMT): Rollback: Need to tie assessment strategies #2 and #3 to learning objectives.

Roy Dixon (rdixon) (Wed, 28 Oct 2020 22:57:56 GMT): Linked assessment strategies 2 and 3 with learning outcomes.

Key: 706