

Course Prefix/Number/Title: CHEM 116- Introductory Organic and Biochemistry

Number of Credits: 4

Course Description: This course provides an introduction to organic and biochemistry, covering essential topics such as functional groups, nomenclature, organic reactions, and the biochemistry of proteins, enzymes, carbohydrates, lipids, nucleic acids, and metabolism. It is designed to meet the requirements for students pursuing careers in wildlife, nursing, dental hygiene, and other health-related fields.

Pre-/Co-requisites: CHEM115 or CHEM121

Course Objectives:

- Identify and explore the major organic functional groups that shape the chemistry of life.
- Master the art of naming simple organic compounds using IUPAC rules to unlock the language of chemistry.
- Discover the fascinating world of biological macromolecules—carbohydrates, lipids, proteins, and nucleic acids—and their vital roles in living organisms.
- Understand how these biological compounds fuel the body and build the essential structures that keep us alive and thriving.
- Dive into the crucial role of enzymes in speeding up and regulating chemical reactions that sustain life.
- Experience the dynamic relationship between chemistry and daily life, with opportunities to explore real-world applications through travel and hands-on learning.

Instructor: Dr. Neysha Tirado-Class

Office: NSC 112

Office Hours: MF : 8am-9am/10am-11am and F: 8am-9am

Phone: (813)-340-1929

Email: neysha.tirado@dakotacollege.edu

Lecture/Lab Schedule: MWF: 12pm-12:50pm Lecture / Th: 11am-12:50pm Lab

Textbook(s): Organic and Biochemistry by Blei and Odian. W.H.Freeman

Course Requirements: Grading: Grades will be based on total points using the following percentage system: 100-90, A; 89-80, B; 79-70, C; 69-60, D; <60, F. Exams, assignments, quizzes, and lab reports will be used to determine the final grade. IMPORTANT! Any grievances concerning graded material must be addressed within one week from the time the material is returned to the student.

Grading Outline: (800pts Total)

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| Exams (100pts each) | 300pts |
| Final Exam | 100pts |
| Lab Final Exam | 100pts |
| Lab Reports (20 pts each) | 200pts |
| Research Assignment | 100pts |

Exams: Exams may contain short answer/essay, multiple choice, completion and problems. There will be no makeup exams unless prior arrangements have been made. If you need to be gone for a school related activity or family event, you will be expected make arrangement prior to the event and take the exam before you leave. Athletes must provide a copy of their schedules season games if they align with any scheduled exam by the 3rd week of classes.

Assignments: There will be one major research assignment during the semester. This will be discussed in class and detailed instructions and grading rubric are available on Blackboard assignment modules. Assignments are due **BEFORE** the scheduled class time of the due date.

Laboratory: The laboratory portion of the course provides an opportunity to integrate lecture concepts with observable activities. Attendance at lab is mandatory! Failure to wear proper PPE will result in a reduction in lab report grades and continued omission will result in removal from lab activities and a loss of all remaining lab points available. To obtain credit, you must be actively involved in the laboratory activities. Labs will be due on the scheduled lab date via Blackboard Lab modules **BEFORE** the start of Lab.

Tentative Course Outline:

| Week | Book | Topic | Lab |
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| Week 1 | Ch. 1-2 | Intro to course and Syllabus | No Lab |
| Week 2 | Ch. 3 | Intro to Organic Chemistry | Molecular Models |
| Week 3 | Ch. 4 | Hydrocarbons | Hydrocarbons |
| Week 4 | Ch. 5 | Alcohols, Phenol & Ethers | Alcohols & Phenols |
| Week 5 | | Review & Exam 1 | Aldehydes & Ketones |
| Week 6 | Ch. 6 | Aldehydes & Ketones | Absorption spectrometry |
| Week 7 | Ch. 7 | Carboxylic Acids & Esters | Carboxylic Acids |
| Week 8 | Ch. 8-9 | Amides & Amides / Stereoisomerism | Caffeine Extraction |
| Week 9 | | Review & Exam 2 | Aspirin Synthesis |
| Week 10 | Ch. 10 | Carbohydrates | Forensics / crime busters |
| Week 11 | Ch. 11 | Lipids | Food Analysis / Urinalysis |
| Week 12 | Ch. 12 | Proteins | Lab Final Exam |
| Week 13 | | Review & Exam 3 | |
| Week 14 | Ch. 13 | Nucleic Acids | |
| Week 15 | Ch. 14 | Enzymes and Metabolism | |
| Week 16 | | Final Exam | |

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s):

- General Education Competency 1: Identifies the interrelationships between humans and their environment
- Learning Outcomes #1- Applies scientific method on inquiry

Relationship to Campus Focus: This course aligns with the campus theme by examining how chemistry influences both our daily lives and the environment. Students will explore the practical applications of chemistry in everyday scenarios, from household products to environmental issues, and understand its broader impact on the world around us. By the end of the course, students will appreciate the significance of chemistry in both their current experiences and future career paths, equipping them with knowledge applicable to real-world challenges and opportunities.

Classroom Policies:

- Make-up exams should be scheduled in advance, no make-up exams will be allowed in the event of an unexcused absence.
- If you must be absent for a school related or family event, you are expected to make prior arrangements and take the exam prior to the event. If you are given permission to take a late exam you will have 48 hours to make it up.
- Electronics policy: Laptops and Tablets are allowed during the class for notetaking and access to resources. Cellphones are not allowed during the class period. Student will be asked once to put the phone away, if asked again you will be asked to leave the class.
- Be respectful of other students, instructors, and guests.

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.

AI Student Policy:

Unless otherwise indicated in the course syllabus, or in individual instructions for course assignments, or in the absence of the express consent of the course instructor, students are not allowed to utilize generative AI to help produce any of their academic work. Any violation of this policy will be considered an act of academic dishonesty as outlined within the Dakota College Code of Student Life.

RESPONSIBILITIES

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| Students | <ul style="list-style-type: none">• Responsible to follow the syllabus and assignment instructions regarding use of generative AI for all academic work.• Obtain permission of the instructor prior to the use of generative AI that is outside of the syllabus or assignment instructions. Provide appropriate rationale for how the use of generative AI will enhance the learning experience for the assignment. |
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| | <ul style="list-style-type: none"> • In instances where generative AI is permissible, appropriately cite the generative AI program used and indicate where in the assignment it was used, in a brief submission statement. |
| Faculty | <ul style="list-style-type: none"> • Determine if the use of generative AI could enhance student learning in any assignment or project. • Clearly indicate in all course syllabi if generative AI is allowable for any academic work. • If allowable, give specific parameters for how and when generative AI may be used. • If a violation of generative AI for the individual course/syllabus is suspected, discuss the concern with the student. If violation is still suspected, inform the appropriate semester coordinator/program director. |