DISCLAIMER: This is an example syllabus that is subject to change at faculty discretion.

DOANE UNIVERSITY

Master Course Syllabus

Term, Year, and Section

Course Information

CHM-205 Organic Chemistry I
4 credit hours

Academic Calendar:

https://web.doane.edu/sites/default/files/2025-02/25-26%20OLA%20Calendar%202.25_1.pdf

The calendar lists pertinent dates regarding drop and withdrawal dates.

Instructor Information

Name:

Email Address:

Office Hours:

Response Time

If you need to contact me directly, my preference is that you email me. Please allow 24 hours for me to respond to emails Monday through Friday and 48 hours on the weekend.

Communicating With the Instructor

When questions arise throughout the course, please remember to check the following resources for an answer before reaching out to me:

1. Course Syllabus
2. Announcements
3. The Question Center discussion board

Question Center Discussion

The Question Center Discussion is a great place for you to ask questions and get answers from your peers and from me. You are encouraged to post your

questions here before reaching out directly to me unless it is a time-sensitive matter. If you have questions of a personal nature such as relating to a personal emergency, questioning a grade on an assignment, or something else that needs to be communicated privately, you are welcome to contact me directly via email or phone.

Technology Help

If you have a question about the technology being used in the course, please contact the Doane University Service Center for assistance, their contact information is listed later in the syllabus. If there are third-party tools utilized in the course, please reach out to them directly.

Course Details

Catalog Description

Organic Chemistry is the chemistry of carbon and its compounds. Organic molecules are building blocks of life. Proteins, fats, sugars, nucleic acids are some examples of important organic molecules. However, organic chemistry also includes synthetic compounds, such as polyesters, plastics, and countless other materials used in everyday life. Through lecture and laboratory, students successfully completing the course will demonstrate an understanding of organic reactions, syntheses, mechanistic, and structural studies of organic compounds. Students will also learn classical organic laboratory skills and instrumentation, such as nuclear magnetic resonance, infrared spectroscopy, chromatography, and mass spectroscopy.

Course Prerequisites

General Chemistry 1 and 2

Course Textbook and Materials

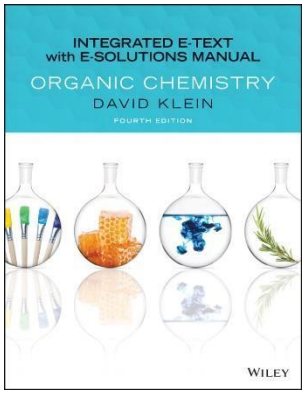
E-Book: Organic Chemistry: Integrated with Solutions Manual 4th Edition

Wiley Plus Access (includes textbook, solutions manual, and online assignments)

Author(s): David R. Klein

Publisher: Wiley

eText ISBN : 978-1-119-83026-9



***Course books and materials will be integrated into your Canvas portal**

Required Technology

Canvas, Printers, smartphone or computer to make videos and take pictures.

Course Lab

As this is a 4-credit course, you can expect to complete three hands on labs and on virtual lab to fulfill the course requirements. You will sign up through Science Interactive to purchase the lab kit. **Instructions on how to purchase the lab voucher are on Canvas**.

Learning Objectives and Course Outline

Program Objectives

1. Demonstrate conceptual understanding and ability to apply fundamental chemical concepts and theory.
2. Effectively communicate scientific concepts, data, results, and arguments through writing
3. Effectively communicate scientific concepts, data, results, and arguments through presentations
4. Understand the origin of scientific knowledge and be able to design or/and execute robust chemical experiments to answer valid scientific questions
5. Represent data appropriately, interpret results, and defend conclusions based on evidence
6. Demonstrate understanding of and competent use of the tools and experimental techniques of chemistry.
7. Obtain, read, understand and interpret relevant chemical literature.

8. Demonstrate a basic fluency in mathematical reasoning and be able to apply it to chemical systems.

Course Objectives

By the end of the course, you will be able to:

1. Explain how electrons move across bonds in three-dimensional space and compare different functional groups on biologically relevant molecules (proteins, fats, sugars, and nucleic acids) and distinguish the properties associated with them.
2. Predict how protons are transferred from one molecule to another and rank acid and base strength based on their functional group properties.
3. Visualize how the three dimensionality of molecules can separate two compounds which seemingly have the same bond connectivity and employ IUPAC naming to categorize their three dimensional characteristics in a way that can be read by anyone in the scientific community.
4. Illustrate through drawing, the movement of electrons from one compound to another as we begin to examine reactivity between molecules.
5. Dissect basic substitution reactions and diagram their reactivity based on either molecular and electronic configurations.
6. Compare substrate/reactant specificity of substitution reactions to that of elimination reactions to establish trends in reaction.
7. Synthesize alkene reactions as they can be used for reactions such as polymerization and begin to build a reaction library to apply toward basic synthesis.
8. Use analytical tools such as mass spectrometry, nuclear magnetic resonance and infrared spectroscopy to identify various compounds by their connectivity and functionality.
9. Apply techniques and concepts of organic chemistry to hands-on experiments and analyze lab results.

Doane Core Connections

These can be found on the Philosophy of the Undergraduate Core at Doane website.

Course Outline

Module	Topic	Assessments & Activities	Aligned Objectives

1	**Molecular Structure, Geometry, Bonding, and Orbitals**	1. Textbook Readings 2. Watching of Instructional Videos 3. Discussions 4. Wiley Adaptive Learning Assignment 5. Wiley Quiz 6. Science Interactive: Getting Started Lab Safety Lab Kit Inventory	1.1 Demonstrate how to draw a Lewis structure of organic compounds. 1.2 Identify hybridization state of various atoms and draw relevant resonance structures for a given Lewis structure. 1.3 Identify various functional groups that make up various organic compounds
2	**Acids and Bases**	1. Textbook Readings 2. Watching of Instructional Videos 3. Discussions 4. Wiley Adaptive Learning Assignment 5. Wiley Quiz	2.1 Predict and draw products of acid-base equilibrium reactions 2.2 Compare acidity/basicity of various compounds and determine which are more/less acidic based on key factors that influence this. 2.3 Apply and analyze the principles of the Henderson-Hasselbalch Relationship/Equation to various applications.
3	**Acyclic and Cyclic Hydrocarbons**	1. Textbook Readings 2. Watching of Instructional Videos 3. Discussions	3.1 Utilize IUPAC rules to name organic compounds

		4. Wiley Adaptive Learning Assignment 5. Wiley Quiz	3.2 Utilize conformational analysis of acyclic and cyclohexane derivatives with emphasis on drawing Newman projections and chair Conformations 3.3 Identify the isomeric relationship between pairs of structures that are not the same.
4	**Chirality and Stereoisomers**	1. Textbook Readings 2. Watching of Instructional Videos 3. Discussions 4. Wiley Quiz 5. Wiley Adaptive Learning Assignment 6. Virtual Lab: Drawing Organic Compounds	4.1 Identify what causes a molecule/atom to be chiral or achiral based on structure and differentiate between enantiomers and diastereomers as well as meso compounds. 4.2 Identify stereocenters and label the absolute configuration of each using the R/S notation. 4.3 Compare structures that are isomers and identify the isomeric relationship between structures
5	**Substitution and Elimination Part 1**	1. Textbook Readings	5.1 Evaluate concepts involving free energy,

		2. Watching of Instructional Videos 3. Wiley Adaptive Learning Assignment 4. Wiley Quiz 5. Hands-on Lab: Molecular Modeling and Lewis Structures	enthalpy, equilibria and kinetics 5.2 Evaluate what causes an atom to be either nucleophilic or electrophilic 5.3 Illustrate the various steps of the SN1 and SN2 mechanism 5.4 Examine the differences between SN1 and SN2 substitution reactions
6	**Substitution and Elimination Part 2**	1. Textbook Readings 2. Watching of Instructional Videos 3. Wiley Adaptive Learning Assignment 4. Wiley Quiz 5. Hands-on Lab: Chromatography of Food Dyes	6.1 Predict substrate bond specificity for various bases 6.2 Illustrate the various steps of the E1 and E2 mechanism 6.3 Differentiate between SN1, SN2, E1 and E2 reactions by predicting and drawing the major organic product expected for several reactions
7	**Alkene Addition Reactions**	1. Textbook Readings 2. Watching of Instructional Videos 3. Wiley Adaptive Learning Assignment 4. Wiley Quiz 5. Hands-on Lab: Isolation and	7.1 Analyze alkene addition reactions 7.2 Demonstrate by predicting and drawing the major organic product expected for several alkene addition reactions. 7.3 Propose multi-step synthesis for various

		Purification of Caffeine	chemical transformations.
8	**Infrared and Nuclear Magnetic Resonance Spectroscopy**	1. Textbook Readings 2. Watching of Instructional Videos 3. Wiley Adaptive Learning Assignment 4. Wiley Quiz 5. Final Exam (cumulative Module 1-8)	8.1 Classify various regions associated with functional groups in Infrared Spectroscopy 8.2 Synthesize the 4 main pieces of information one gets from the 1H NMR. 8.3 Solve structural elucidation problems by analyzing IR and NMR

Course Requirements

This is an online course and there will **not be any face-to-face class sessions**. All communications, submissions of assignments, course interactions, and posting of grades will utilize Canvas LMS (https://doane.instructure.com). You must have a **reliable internet connection** throughout the duration of the course.

Attendance/Participation

Attendance in an online course means logging onto Canvas regularly and participating in all the activities that are posted in the course. In addition, check your Doane University email account and the Canvas Announcements regularly, as I may send important information about the course.

Class Preparation

Preparation for class means reading the assigned readings and reviewing all information required for that module. You should plan to work on this course every day. Regular engagement is expected for online courses.

Netiquette Guidelines

At heart, Netiquette (etiquette for the Internet) is simple, good manners and business courtesy. Some of it may seem basic, but some infringements can result in major problems for others or can create an unintended insult to another user. The guidelines are adapted from The Core Rules of Netiquette by Virginia Shea (1994). For more information, please review the Netiquette Guidelines in the Student Resource Center.

Computer Requirements

For the successful use of Canvas please refer to Doane University's minimum computer requirements. This also includes:

- Reliable computer and internet connection
- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader (free)
- Word processing software—Microsoft Word or Google Docs
- Webcam and mic*

*For privacy purposes, use of a webcam is **optional** during video conferencing and recording.

Campus Network or Canvas Outage

When access to Canvas is not available for an extended period of time (greater than one entire evening - 6 pm until 11 pm) you can reasonably expect that the due date for assignments will be changed to the next day.

Drop and Add Dates

If you feel it is necessary to withdraw from the course, please contact your advisor for full details on the types of withdrawals that are available and their procedures.

Federal requirements state that students must complete 75% of the coursework to be eligible to receive an incomplete for the course. If students fall more than two weeks behind, they cannot meet this requirement.

Academic Integrity

Fundamental to our mission, our core values, and our reputation, Doane University adheres to high academic standards. Students of Doane University are expected to conduct themselves in a manner reflecting personal and professional integrity. Disciplinary actions may be taken against

students whose academic behavior is not congruent with the expectations of the University. Students are responsible for adhering to the standards detailed in this policy. Not being familiar with these standards does not mean that the students will not be accountable for adherence to them. Additional details on the Academic Integrity policy for violating academic integrity are published in the undergraduate and graduate catalogs. Please review Doane University's Academic Integrity Policy.

Course Grading

Submitting Assignments

All assignments, unless otherwise communicated to me, must be submitted via Canvas. Each assignment will have a designated place to submit your work. All materials, assignments, and deadlines are subject to change without prior notice. It is your responsibility to stay in touch with me and review the course site (Canvas), including Announcements, regularly to learn about changes to assignments or due dates.

Grading Scale

Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

Grade	Percentage
A+	97-100%
A	93-96%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	<60%

Grading Scheme

The following outlines the weighted breakdown for how grades will be calculated:

Type of Assessment or Activity	Total possible points (weighted Grade)
Wiley Plus Adaptive Assignments (8)	20% of Grade
Wiley Plus Quizzes (8)	20% of Grade
Labs (TBA)	25 % of Grade
Discussions	10 % of Grade
Final Exam Wiley Plus	25 % of Grade
Total	**100%**

Proctored Assessments:

This course may contain proctored quizzes & exams, which are **not optional**. For these proctored events, Doane uses a third-party provider, which is a secure, online proctoring service that allows you to complete your exam from any chosen location at any time. Proctoring provides your instructor with the assurance that any suspicious activity by test takers will be monitored and reported. The cost of the proctoring is included in the tuition and fees for this course.

Late or Missed Assignments (at the discretion of the faculty member)

All assignments must be completed and turned in to finish the course. Furthermore, all assessment types (assignments, discussions, labs, quizzes, final exam) must be submitted by the due date to receive credit. Unless you

discuss an extension with me before the due date, late submissions will receive zero points.

Assignment & Assessment Feedback (at the discretion of the faculty member)

There is no extra credit offered in this course.

Please allow up to one week from date of submission for grades and any feedback the instructor wishes to provide back on written assignments. Be sure to review my feedback, as this will help you reflect on what you have learned while receiving suggestions for improvement.

Grade Appeals

Students who believe that their grade was miscalculated due to a mathematical error should contact the instructor within **ten (10) days of the grade posting**. A student is encouraged to talk with their advisor to offer an assessment of the concern and to clarify the steps of the appeal process. More information is published in the Undergraduate and Graduate Catalogs.

Studying and Preparation Time

The course requires you to spend time preparing and completing assignments. A three-credit course requires 144 hours of student work. Therefore, expect to spend approximately 9 hours a week preparing for and actively participating in this 16-week course.

Tutor Me

Students will have access to a free tutor me service within their Canvas account. You can connect with a live free tutor or submit a paper to get feedback before submitting.

Technical Support

If you are in need of technical assistance, please access the Self-Service Portal. You may reach the help desk at 402-826-8411 or by email at helpdesk@doane.edu.

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of

academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate student transitions from high schools and community colleges, conduct in-service training for faculty and staff, enable the resolution of accessibility issues, conduct community outreach, and facilitate collaboration among Doane University staff on disability policies, procedures, and accommodations.

Accommodations & Disability Services

Doane University's Disability Services Office will provide guidance on accommodations and universal access. To request accommodations please complete the Self-Identification Form and visit the website for additional information as soon as possible.

Academic Support

Doane University offers all of its students access to Academic Support services.

Title IX Requirements: Mandatory Reporting

At Doane, all university employees, including faculty, are considered Mandatory Reporters. As a Mandatory Reporter, I am required to report incidents of sexual misconduct and relationship violence to the Title IX Coordinator and, thus, cannot guarantee confidentiality. This means that if you tell me about an incident of sexual harassment, sexual assault, domestic violence, dating violence, stalking and/or other forms of prohibited discrimination, I have to share the information with the University's Title IX Coordinator. My report does not mean that you are officially reporting the incident. This process is in place to ensure you have access to and are able to receive the support and resources you need. For additional information, including confidential resources, please visit the Campus Advocacy, Prevention, and Education (CAPE) Project.

Anti-Harassment Policy

Doane University, referred to as the "University", is committed to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community. This policy addresses the University's responsibilities under Title IX, the Violence Against Women Reauthorization Act of 2013, and the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act ("Clery Act"). More information is published in the Student Handbooks.

Instructional Technology Accessibility and Privacy Policies

Technology accessibility and privacy policies are available on the Student Resource Center within the Canvas LMS.

Regular and Substantive Interaction

The U.S. Department of Education mandates that online courses include "regular and substantive interaction" (RSI) between students and instructors to be considered distance education. This course adheres to the RSI expected of all distance education courses. The course adheres to the regular component through

- a clear schedule of due dates for lessons, readings, and assessments
- an instructor of record who monitors student progress in the course and alerts the students who are not engaging adequately in the course.

The substantive interaction is achieved through

- assessment of students' work with feedback on a scheduled basis
- an active discussion board about course content monitored by the instructor
- providing information about the course content on a regular basis or in response to questions.

Syllabus Addendum & Disclaimer

I (the instructor) view the course syllabus as an educational contract between myself and each student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. I reserve the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email or in the course site Announcements. Please remember to check your Doane University email and the course site Announcements often.

Syllabus Changes

The instructor and Doane University reserve the right to make changes as necessary to this course syllabus. All students will be notified of any changes.

Syllabus Addendum

Each student is responsible for being aware of the policies, resources, and expectations as specified in the Doane Syllabus Addendum.