

# Chemistry 231, Organic Chemistry I, Fall 2017 Instructor: Misty Peacock

**Course website: Canvas webpage Email:** **mpeacock@nwic.edu**

**Prerequisites:** MATH 98, CHEM 111, 112, and 113 (or 121, 122, and 123)

## Required Textbook:

Hart, Craine, and Hart. Organic Chemistry: A Short Course ISBN: 0-395-90225-8 10th edition

ISBN 13: 978-0618215362 11th edition

ISBN 13: 978-0618590735 12th edition

ISBN 13: 978-1111425562 13th edition

The first 3 are out of print textbooks, which you can buy from various used book suppliers online (Amazon, Powell’s, Valorebooks, Barnes and Nobles, Abebooks etc.) for about $10 - $40. The 13th edition is the most current edition, and about $295 unfortunately. Another way is to RENT the textbook - from sites such as Amazon or Barnes and Nobles. I will put a copy of the 10th edition in the library

**Lecture Time and Place**: T/TH, 9:30-10:45 PM, Building 16, NE 112.

**Laboratory**: Th 1:30 - 5:00 PM, Building 16, NE 112

**Office Hours**: Building 16, # 108. Tuesday, 11-2; or email to make an appointment.

## Email: mpeacock@nwic.edu Phone: 360-594-4082

A scientific calculator is highly recommended for this course. Every student interested in a science-related field should acquire a scientific calculator and learn to use it. You will **NOT** be allowed to use your phone’s calculator, especially during exams. But you can borrow one from the library!

*Course description*

Introduction to the structure, nomenclature, synthesis, and reaction of organic compounds. Topics include bonding and isomerism, stereoisomerism, alkanes, alkenes, alkynes, polymers, substitution and elimination reactions, alcohols, ethers, lipids, and detergents. Laboratory required, including separation, purification, and identification.

*College mission statements*

“Through education, Northwest Indian College promotes indigenous self-determination and knowledge.”

## Program outcomes

Northwest Indian College outcomes related to this course include (reworded for this class):

3. Inquiry, a Use Indigenous theories and methods to conduct inquiry-based research and evaluation that respond to the needs of Indigenous communities and serve to promote Indigenous self-determination.

This may include multiple perspectives: view problems through different lenses. Your Native culture is a lens, so is chemistry. Math, Native philosophy, law, these are all different perspectives that can enrich your ability to investigate, explore, and engage with the natural world and people that depend on it. By taking chemistry, you will gain insights that you did not have before you took this course.

Note regarding content knowledge: This course will help you *develop literacy in the skills, knowledge and abilities necessary to engage with a research question.* Chemistry will not make you a Native environmental scientist. Then again, it is hard to be a Native environmental scientist without at least some chemistry. This course extends the learning and teachings of the CHEM 111 or 121 series.

4. Communication, a. Communicate using oral, written, and graphical (visual) methods to support Indigenous self-determination

In Chemistry 231, you will develop your ability to communicate by writing weekly lab reports, explaining how to solve chemistry problems to your fellow students, and by researching and writing a short-form NSF proposal. This is a preparation course for graduate school in the environmental or earth sciences.

## Course Outcomes

In this course you will learn to:

1. Collect, analyze, and report scientific data.
2. Predict chemical bonding results of reactions.
3. Use advanced laboratory techniques safely in a laboratory setting.
4. Develop research questions.

*Student Evaluation*

2 exams:

1 final exam:

4 lab reports:

1 Proposal:

10 Quizzes:

6 Problem sets:

100 points

50 points

200 points

100 points

100 points

150 points

**TOTAL:**

**700 points**

*Exams*

Each exam is worth the same amount of points. You will not be allowed to use your phone as a calculator during the exam!

*Lab reports*

In lab, we will emphasize techniques of organic chemistry that are used to measure water quality and everyday surroundings. Labs will focus on the environmental chemistry of local bodies of water, including the Nooksack River and Bellingham Bay. The intent is for students to acquire knowledge of useful chemical lab techniques, and to apply this learning to analyze organic chemistry important to your tribe. Labs are **MANDATORY** and cannot be made up (without extenuating circumstances).

*Proposal*

Towards the end of the quarter, there will be a 2-page proposal, similar to the NSF graduate research proposal that can be applied for in the first 2 years of graduate study. Students will utilize what they have learned about how to conduct research and propose a topic that is meaningful and important in their life.

*Quizzes*

Quizzes will be ~weekly, open book, open note, and online through CANVAS. Late quizzes will not be accepted. You will have 1 week to complete the quiz, but you cannot go back once you’ve answered the question. There is no time limit per question.

*Problem Sets*

Assignments will be ~bi-monthly. You MUST show your work to get credit.

*Important Policies*

* 1. Late work will be marked down 10% each week it is late. No late work will be accepted after December 9th.
	2. To receive credit, you MUST show your work.
	3. To pass the course you MUST complete the final and the proposal. You will not pass the course if you fail to complete both.
	4. Plagiarism (copying someone else’s work) will result in an automatic **ZERO. Repeated plagiarism and you will fail the class.**

*Student Responsibilities*

Get serious about learning! Students make or break a class. You can help yourself and your peers by making a strong and sustained effort to learn chemistry.

1. Performance. Make an effort to perform at a high level. You are expected to keep pace with the class. If you have difficulty with a part of an assignment or exam, make sure that you ask questions in class or come to office hours. It is important to start a good pace and keep it throughout the quarter. Most students that fall behind in science courses do not pass the class.
2. Attendance. If you do not come to class, it is not likely that you will pass Chemistry 288. Please attend class. Attendance is reported to student services and this information will be used to determine who is eligible to receive financial aid checks, among other things.
3. Community. I encourage students to work together. Working together is a great way to learn, but students MUST turn in their own work. Do NOT copy each other’s work.
4. Participation. Ask questions. If there is a concept or problem that you do not understand, make sure that you ask for an explanation. It is OK to repeatedly ask questions until you understand a problem.
5. If you need to use your cellphone, please step outside class so as not to disturb the rest of us. You should be using a scientific calculator, and not your cellphone.

## SCHEDULE

**This is a TENATIVE schedule - expect it to change!**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WK** | **DATE** | **TOPIC** | **Chapt** | **Lab** |
| 1 | 19-Sept | Introduction |  |  |
| 1 | 21-Sept | Bonding and Isomerism | 1 |  |
| 1 | 21-Sept |  |  | Lab Safety |
|  |  |  |  |  |
| 2 | 26-Sept | Alkanes andCycloalkanes | 2 |  |
| 2 | 28-Sept | Alkenes and Alkynes, polymers | 3, 14 |  |
| 2 | 28-Sept |  |  | Slime Lab |
|  |  |  |  |  |
| 3 | 3-Oct | Chemistry of Fats | 2 |  |
| 3 | 5-Oct | Alkenes and Esters | 10 |  |
| 3 | 5-Oct |  |  | Esters Lab #1 |
|  |  |  |  |  |
| 4 | 10-Oct | Review |  |  |
| **4** | **12-Oct** | **EXAM I** |  |  |
| 4 | 12-Oct |  |  | Esters Lab #2 |
|  |  |  |  |  |
| 5 | 17-Oct | Reactions andEnergetics | 3 |  |
| 5 | 19-Oct | Reactions andEnergetics | 3, 12 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 5 | 19-Oct |  |  | Field trip (boat) |  |
|  |  |  |  |  |  |
| 6 | 24-Oct | Pesticides, carcinogens, badstuff | 4 |  |  |
| 6 | 26-Oct | Substitution andElimination reactions | 6 |  |  |
| 6 | 26-Oct |  |  | Field trip (back up) orOrganics #1 |  |
|  |  |  |  |  |  |
| 7 | 31-Oct | Review |  |  |  |
| **7** | **2-Nov** | **EXAM II** |  |  |  |
| 7 | 2-Nov |  |  | Organics #2 |  |
|  |  |  |  |  |  |
| 8 | 7-Nov | Substitution andElimination Reactions | 6 |  |  |
| 8 | 9-Nov | Substitution and EliminationReactions | 8 |  |  |
| 8 | 9-Nov | Saponification |  | Saponification Lab #1 |  |
|  |  |  |  |  |  |
| 9 | 14-Nov | Lipids andDetergents | 15 |  |  |
| 9 | 16-Nov | Lipids andDetergents | 15 |  |  |
| 9 | 16-Nov |  |  | Saponification Lab #2 |  |
|  |  |  |  |  |  |
| 10 | 21-Nov | Hormone Chemicals | 7 |  |  |
| **10** | **23-Nov** | **HOLIDAY** |  |  |  |
| **10** | **23-Nov** | **HOLIDAY** |  | **NO LAB HOLIDAY** |  |
|  |  |  |  |  |  |
| 11 | 28-Nov | Sterioisomerism/ Biotoxins | 5 |  |  |
| 11 | 30-Nov | Review |  |  |  |
| 11 | 30-Nov |  |  | Proposal |  |
|  |  |  |  |  |  |
| 12 | 5-Dec | FINAL |  |  |  |
| **12** | **8-Dec** | **NO CLASS** |  |  |  |
| **12** | **8-Dec** |  |  | **NO LAB** |  |
|  |