

## Chemistry 2003B Course Outline

### 1. Course Information

Organic and Biological Chemistry for Food Science, Chemistry 2003B, (2022-23).

Lecture: NCB 114, MWF, 11:30 AM – 12:30 PM EST.

Laboratory: See section 3 on page 2 for the laboratory schedule.

Office hours: TBA.

#### List of Prerequisites

Chem 1301A/B and 1302A/B, or the former Chem 1100A/B, or the former Chem 1050.

#### List of Antirequisites

Chem 2213A/B, 2223B, 2273A, 2283G.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

### 2. Instructor Information

Instructor	Email	Office	Phone	Office Hours
Dr. Augusto Matarazzo	amataraz@uwo.ca	UH 351	N/A	TBA

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

If you find yourself not understanding the lectures, assigned readings, or problems, please set up an appointment with me by sending me an email from your Western email account with the term CHEM2003 in the subject line. Questions related to course material can also be posted on the OWL discussion board.

Dr. Matarazzo will hold help/office hours in person or via Zoom for the entire term. Details regarding dates/times and Zoom information will be forwarded as announcements through OWL/email contact.

### 3. Course Syllabus, Schedule, Delivery Mode

An overview of the properties and common reactions of selected functional groups and biomolecules, including carbohydrates, proteins, and lipids. Emphasis will be placed on the importance and application of organic chemistry in the food sciences.

Broadly speaking, a student receiving credit for the course will be expected to demonstrate competence in their ability to:

- Recognize the importance of organic chemistry in everyday life and its interdisciplinary nature.
- Think critically about, explain, integrate, and apply chemical principles, laws, and theories.
- Solve a variety of novel problems, both qualitative and quantitative.
- Safely execute a variety of experimental procedures and explain the theory behind them.
- Use a variety of laboratory equipment and instrumentation.
- Draw scientific conclusions from experimental results or data.
- Examine, integrate, and assess any provided or collected chemical data.
- Communicate scientific thoughts and ideas in writing.
- Obtain, evaluate, and integrate information from various sources, and determine its relevance.
- Analyze and critically assess problems, and take a systematic approach to solving them.
- Prioritize a set of tasks and manage the use of their time.

#### Lecture Schedule:

Section	Time (MWF)	Room	Delivery mode
001	11:30 AM – 12:30 PM EST	NCB 114	In-person

#### Laboratory Sections and Schedule:

Laboratory sections are shown below. You must attend the section in which you are registered. There are no labs during the week of February 20th. Please follow the schedule carefully, because there are no make-up labs. A missed lab will result in a mark of zero unless academic accommodation has been granted.

Experiment	Odd-Numbered Lab Sections	Even-Numbered Lab Sections
1. Recrystallization and Determination of Melting Point	Week of January 23 <sup>rd</sup>	Week of January 30 <sup>th</sup>
2. Separation of a Two-Component Mixture by Extraction	Week of February 6 <sup>th</sup>	Week of February 13 <sup>th</sup>
3. TLC Analysis of Spinach Pigments	Week of February 27 <sup>th</sup>	Week of March 6 <sup>th</sup>
4. Acetylation, Oxidation, and Hydrolysis of Carbohydrates	Week of March 13 <sup>th</sup>	Week of March 20 <sup>th</sup>

5. Fats, Oils, Soaps, and Detergents	Week of March 27 <sup>th</sup>	Week of April 3 <sup>rd</sup>
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For each experiment, watch any provided technique videos that may be on OWL and complete the prelab quiz before the start of your scheduled laboratory session. The videos and prelab quiz will be released at least one week prior to your scheduled lab session. The prelab quizzes are worth 20% of each laboratory and cannot be taken until after the prelab videos have been viewed.

All lab-related enquiries should be directed to the Chemistry 2003B Laboratory Coordinator: Sandra Zakaria Holtslag, MSA 1235, [szakaria@uwo.ca](mailto:szakaria@uwo.ca).

### Anticipated Class Topics:

Chapter	General description	Approximate classes
1	Structure and Bonding (review of 1 <sup>st</sup> year; self-study section)	0
2	Acid-Base Reactions (some material from 1 <sup>st</sup> year)	1.5
3 and 4	Structure of Organic Compounds (Functional groups, physical properties, nomenclature, alkanes, cycloalkanes, conformations, isomerism)	5
5	Alkenes and Introduction to Reactivity (some material from 1 <sup>st</sup> year)	1.5
6	Reactions of Alkenes & Alkynes	3
	Tentative Midterm Test #1	
7	Delocalization, Stability, and Aromaticity (some material from 1 <sup>st</sup> year)	3
8	Alkyl Halides – Substitution and Elimination	2.5
9	Alcohols, Amines, Ethers, and Epoxides	2.5
	Tentative Midterm Test #2	
11 – 13	Compounds with Carbonyl Groups	6
16	Carbohydrates	3
17	Amino Acids	2
20	Lipids	2
18	Overview of Enzymes and Coenzymes	1

In all of the topics, the primary focus is on the *understanding* of the concepts. Please try to garner a thorough, in-depth understanding of the material, because that is what allows success in chemistry.

### **Key Sessional Dates:**

Classes begin: January 9, 2023

Reading Week: February 18 – 26, 2023

Classes end: April 10, 2023

Exam period: April 13 – 30, 2023

## **4. Course Materials**

In addition to proper lab attire, the materials below are required and are available at the bookstore.

- *Essential Organic Chemistry*, 3<sup>rd</sup> edition, by Paula Bruice, eText (180-Day) ISBN: 9780133867275. Please note that there is no need to purchase the solutions manual, because we have obtained permission from the publisher to post the relevant sections of the solutions manual on OWL free of charge.
- *Chemistry 2003B Laboratory Manual* (Winter 2023 edition). Old editions may not be used. Students repeating the course will require a new lab manual.
- Proper lab attire. This includes an appropriate lab coat, safety glasses, shoes, socks, and pants. Please see the lab manual for further details.

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

All course material will be posted to OWL: <http://owl.uwo.ca>.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

### **Technical Requirements:**

A stable internet connection is required.

## 5. Methods of Evaluation

Tests and exams are necessary to assess your mastery of core concepts. The overall course grade, out of 100, will be calculated as listed below.

Component	Notes	Normal Value	Test 1 Missed	Test 2 Missed	Test 1 + 2 Missed
Test #1*	Saturday, Feb. 11 <sup>th</sup> , 7:00 - 8:15 pm	20		20	
Test #2*	Saturday, Mar. 18 <sup>th</sup> , 7:00 - 8:15 pm	25	35		
Final Exam	Scheduled by the Registrar	40	50	65	85
Laboratory	Five experiments (3.00 each)	15	15	15	15

\* Tentative dates and times.

To be fair to everyone in the class, none of the components will be “dropped,” and it is not possible to have the components reweighted unless they were legitimately missed.

**There are no make-up labs or tests.** See Missed Course Components for more details. **To obtain credit for the course, all four requirements below must be met:**

1. Obtain a minimum of 50% on the overall course grade.
2. Obtain a minimum of 50% on the laboratory component (7.50 out of 15). This mark is calculated from all five experiments. A missed experiment is assigned a mark of zero unless it has been “excused” (see section on Missed Course Components).
3. Obtain a minimum of 50% on the Examination components of the course overall (i.e. 42.50/85).
4. Miss no more than two experiments, **whether excused or not.**

Students who fail to meet requirements #2, #3 or #4 will receive a course grade no greater than 40% (even if the calculated course grade is higher) and will not receive credit for the course.

## 6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

### **Assessments worth less than 10% of the overall course grade:**

**There are no make-up labs, and it is not possible to reschedule them.** If you miss a lab for any reason, you will be assigned a mark of zero for that lab. If the missed lab is due to a reason that is approved by your faculty's Academic Counselling Office, the zero will be replaced by a mark of EXCU (excused), which shifts the weight of the missed lab onto all of the other labs.

You must, **as soon as you're able to do so**, submit medical documentation to your faculty's Academic Counselling Office. If they approve your circumstances, we will be notified.

Tests and exams will contain questions related to the theoretical aspects of the experiments. You are responsible for the material pertaining to the missed labs.

**Lab reports are due at the end of the lab session.** If you do not submit your lab report at the end of the lab session you will receive a mark of zero for that lab report.

### **Assessments worth 10% or more of the overall course grade:**

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

[https://www.uwo.ca/sci/counselling/procedures/academic\\_consideration\\_for\\_absences/illness.html](https://www.uwo.ca/sci/counselling/procedures/academic_consideration_for_absences/illness.html)

The Student Medical Certificate is available at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

**Please note that there are no make-up tests.** If your faculty's Academic Counselling Office has approved your circumstances, the value of the missed test will be reallocated as described in the evaluation scheme.

### **Absences from Final Examinations**

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

## 6. Accommodation and Accessibility

### Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at:

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic%20Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf)

## 7. Academic Policies

The website for Registrarial Services is <https://www.registrar.uwo.ca>

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf),

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

No electronic devices may be in your possession during tests and exams.

**Scholastic offences** are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

## 8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at:

[https://www.uwo.ca/health/student\\_support/survivor\\_support/index.html](https://www.uwo.ca/health/student_support/survivor_support/index.html)

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at:

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at [ssc@uwo.ca](mailto:ssc@uwo.ca).