

# Intermediate Organic Chemistry Lab II

## (Tuesday/Thursday)

**Course:** CHEM 3110, CRN 51295 (2 credits)  
**Semester:** Summer 2021  
**Instructor:** Dr. Joan Mutanyatta-Comar  
**E-mail:** jmutanyattacomar@gsu.edu  
**Pre-lab lecture:** **Synchronous: 9:00 am - 9:50 am (on Webex)**  
**Lab session:** **On Labflow platform: 10:00 am – 1:45 pm**  
**Office hours:** Online via WebEx: will be scheduled on iCollege.  
**Tuesday/Thursday:** 4:00 pm – 5:00 pm.

### Course Description

This is CHEM3110: Intermediate Organic Chemistry Lab II. It is the second of a two-semester sequence of Organic Chemistry laboratories and is taught by faculty at Georgia State University's Chemistry Department. The pre-requisite for this course is CHEM 2100 with a C or better. Topics include modern quantitative and physical laboratory methods applied to the synthesis, separation, purification, identification, and the physical and chemical properties of organic compounds.

This course will be taught 100% online. Each student is expected to attend the synchronous pre-lab lecture from 9:00 am to 9:50 am. We will be using experiments from a company called Labflow. Students will work on the day's experiment on the Labflow platform from 10:00 am - 1:45 pm. Students have 24 hours to complete and submit the experiment (please see more details under "schedule"). I will have synchronous office hours via WebEx that will be scheduled on iCollege.

I expect that full participation in this course will require approximately 8.5 hours per week, which involves the pre-lab lecture & interacting with readings, videos, and completing assessments.

\*\*\*Please do note that this syllabus reflects a plan for the semester. Deviations may become necessary as the semester progresses. \*\*\*

### Learning Outcomes

Upon completion of this course, you should be able to:

- Demonstrate the ability to work safely in an organic chemistry laboratory.
- Know how to handle and dispose hazardous waste.
- Write mechanisms for carbon-carbon bond formation reactions.
- Write mechanisms for functional group transformation reactions.

- Describe techniques required to check for purity of synthesized compounds.
- Analyze and interpret  $^1\text{H}$  &  $^{13}\text{C}$  NMR spectra.

Your new skills should help you in the following ways:

- Prepare you for other STEM disciplines. Understanding the properties of organic molecules and how reactions occur is critically important to understanding the processes in an industrial plant.
- Organic chemistry teaches important career readiness competencies and skills such as critical thinking/problem-solving skills, and work ethics.

## Schedule

Although this is an online course, we do have a set schedule. You'll want to refer to the calendar below frequently as we work together. I've also designed the course in such a way to help us all stay on track, including building in **Weekly Modules and Due Dates Attached to Graded Items**. If this is your first time taking an online course, you'll want to review resources for learning remotely at [GSU's CETLOE website](#). Please note that deviations may become necessary as the semester progresses. Therefore, please check iCollege announcements daily.

This course consists of a welcome module and eleven modules. The eleven modules are equivalent to lab safety review, nine experiments to be covered in this course from Labflow and the final exam. Each module has a start date and end date. Therefore, matching your pace with the schedule outlined in the syllabus will ensure that you have completed each module in a timely manner. While you are working, I'll also be working hard to give you quality feedback and grade your assessments as soon as possible, after the due dates.

**Please talk to your instructor and your advisor before withdrawing from this course. We care about your success and are here to discuss your options with you. The last day to withdraw without penalty is July 2, 2021.**

## Your To-do List

Below is a list of your assignments, along with due dates. Chapters referenced in these modules are from the textbook "Organic Chemistry, 9<sup>th</sup> Ed by John McMurry" that we will be using for reference along with Labflow. All experiments to be carried out in this course will be housed on Labflow.com website. Instructions on how to create an account and login into Labflow.com. are on iCollege under "Syllabus."

### Welcome Module: (June 8- June 11) Tuesday 9:00 am to Friday 9:00 am

- Look at the welcome module, meet your instructor and read the syllabus in detail. This will help you familiarize yourself with the requirements for this course.
- Do the syllabus quiz (on iCollege) found at the end of the Welcome Module

- Register for Labflow at Labflow.com using the instructions uploaded on iCollege under the “syllabus.”

**Module 1: (June 8-June 11) Tuesday 9:00 am to Friday 9:00 am**

- Synchronous pre-lab lecture: Introductions & Overview of the course (Webex)
- Organic Lab Safety Review Quiz (on Labflow.com)
- Review: Melting point of compounds and mixtures (on Labflow.com)
- Review: Significant figures and conversions (on Labflow.com)
- Review: IR Spectroscopy (on iCollege)

**Module 2: (June 15-June 16) Tuesday 9:00 am to Wednesday 9:00 am**

- Grignard Reaction: Synthesis of Benzoic Acid (Reference: Chapters 10.6, 19.7 & 20.5)
- Synchronous pre-lab lecture (Webex)
- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Watch video on recrystallization
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

**Module 3: (June 17-June 18) Thursday 9:00 am to Friday 9:00 am**

- Diels-Alder Reaction (Reference: Chapter 14.4 & 14.5)
- Synchronous pre-lab lecture (Webex)
- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Watch video on vacuum filtration
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab question

**Module 4: (June 22-June 23) Tuesday 9:00 am to Wednesday 9:00 am**

- Nucleophilic Aromatic Substitution Reaction (Reference: Chapter 16.6)
- Synchronous pre-lab lecture (Webex)
- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

**Module 5: (June 24-June 25) Thursday 9:00 am to Friday 9:00 am**

- Hydration of 1-Hexene (Reference: Chapter 8.4)
- Synchronous pre-lab lecture (Webex)

- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

**Module 6: (June 29 – June 30) Tuesday 9:00 am to Wednesday 9:00 am**

- Reducing Benzil (Reference: Chapters 5.1, 5.6, 5.7, 19.7)
- Synchronous pre-lab lecture (Webex)
- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

**Module 7: (July 1-July 2) Thursday 9:00 am to Friday 9:00 am**

- Cannizzaro Reaction Without Solvent (Reference: chapter 19.12)
- Synchronous pre-lab lecture (Webex)
- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

***July 2, 2021: Last day to withdraw with grade "W"***

**Module 8: (July 6 – July 7) Tuesday 9:00 am to Wednesday 9:00 am**

- Synthesis of Aspirin (Reference: Chapter 21.5)
- Synchronous pre-lab lecture (Webex)
- Experiment (on Labflow.com)
  - ❖ Read the background information about the reaction
  - ❖ Read the procedure for the reaction
  - ❖ Watch Videos: running a TLC and performing vacuum filtration
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

**Module 9: (July 8-July 9) Thursday 9:00 am to Friday 9:00 am**

- $^1\text{H}$  NMR Spectroscopy (Reference: Chapter 13)
- Synchronous pre-lab lecture (Webex)
- $^1\text{H}$  NMR Practice Quiz (on iCollege) – not for a grade
- $^1\text{H}$  NMR Experiment (on Labflow.com)

- ❖ Read the background information about NMR
- ❖ Read the procedure
- ❖ Watch a video: Interpreting proton NMR spectrum
- ❖ Do pre-lab questions
- ❖ Take the pre-lab quiz
- ❖ Complete lab report + post-lab questions

**Module 10: (July 13-July 14) Tuesday 9:00 am to Wednesday 9:00 am**

- <sup>13</sup>C NMR Spectroscopy (Reference: Chapter 13)
- Synchronous pre-lab lecture (Webex)
- <sup>13</sup>C NMR Practice Quiz (on iCollege) – not for a grade
- <sup>13</sup>C NMR Experiment (on Labflow.com)
  - ❖ Read the background information about NMR
  - ❖ Read the procedure
  - ❖ Watch a video: Interpreting <sup>13</sup>C NMR spectrum
  - ❖ Do pre-lab questions
  - ❖ Take the pre-lab quiz
  - ❖ Complete lab report + post-lab questions

**Module 11: (July 15) Thursday 9:00 am – 9:50 am then 12:45 pm -1:45 pm**

- Final Exam Review Session: Review all iCollege and Labflow content (modules 1-10) in preparation for the final exam

**Module 12: Tuesday, July 20 (9:00 am) to Wednesday, July 21 (11:59 pm)**

- **Final Exam (on iCollege)**

## Assessments and Grading

### Assessments

Below is a breakdown of points for each assessment activity in each module (except modules 1&8)

Pre-lab Questions	= 10 points
Pre-lab Quiz	= 10 points
Lab Report + Post-lab Questions	= <u>80 points</u>
Total Points	= 100 points

The overall total points for each module is indicated below:

Syllabus Quiz	= 15
Module 1: Lab Safety Review	= 15
Module 2: Grignard Reaction: Synthesis of Benzoic Acid	= 100
Module 3: Diels-alder Reaction	= 100
Module 4: Nucleophilic Aromatic Substitution Reaction	= 100
Module 5: Hydration of 1-Hexene	= 100
Module 6: Reducing Benzil	= 100
Module 7: Cannizzaro Reaction Without Solvent	= 100
Module 8: Synthesis of Aspirin	= 70

Module 9: $^1\text{H}$ NMR Experiment	= 100
Module 10: $^{13}\text{C}$ NMR Experiment	= 100
Module 11: <b>FINAL EXAM</b>	<u>= 200</u>
<b>TOTAL LAB POINTS</b>	<b>1100</b>

## Grading

This is how the chemistry department awards grades for courses:

**A+** = 95%; **A** = 90%; **A-** = 87%; **B+** = 84%; **B** = 80%; **B-** = 77%; **C+** = 74%; **C** = 70%;  
**C-** = 67%; **D** = 60%; **F** = < 60%

## Getting Help and Accessing Resources

Note that this is a **100%** online course. Here are a few tips to get you started:

### Contacting Your Instructor

I prefer to be contacted by email ([jmutanyattacomar@gsu.edu](mailto:jmutanyattacomar@gsu.edu)). I will respond within 24 hours. Please send emails to me from your GSU e-mail account (e.g., [jcole1@student.gsu.edu](mailto:jcole1@student.gsu.edu)). Please put the course name in the subject of your email.

**Please do not email me from iCollege**

**NOTE: Please note that I do not usually check emails on Saturdays and Sundays, therefore make sure to ask any questions you may have during the week.**

### Accessing the Course

You can login to your course via iCollege using your GSU CampusID and password. For help finding and pinning your course in iCollege, please review [iCollegeNow!'s finding and Pinning Your Course page](#).

Instructions on how to create an account and access experiments and assignments on Labflow.com are on iCollege under the "Syllabus."

### Activating iCollege Notifications

In iCollege, click on your name then click on "notifications" and select the notifications in the list given. The most important notification you must select is the "announcements-new announcements available". I will be putting daily announcements to remind you of due dates and any updates about experiments. Please feel free to select as many notifications as possible.

### How to view answers for graded quizzes or exams on iCollege

To view answers for graded quizzes/exams: Click the down arrow next to the quiz/exam, then click on submission reports then attempts.

### Technology Questions

For technology-specific questions and issues, please contact the IIT Help Desk at [help@gsu.edu](mailto:help@gsu.edu) or 404-413-4357.

For iCollege-specific questions you may also use the USG's 24/7 D2L helpdesk:  
<https://d2lhelp.view.usg.edu/s/>

For technology questions related to Labflow experiments, please contact Labflow at Labflow.com.

### **Recommended Textbook**

Organic Chemistry by John McMurry, 9<sup>th</sup> Edition. This book can be purchased online at [Cengage website](#) (Student Edition, ISBN: 978-1-305-08048-5; Loose-leaf Edition ISBN: 978-1-305-63871-6).

### **Are There Any Required Meetings?**

**Students are expected to attend the synchronous pre-lab lecture from 9:00 am -9:50 am via webex.** There will be no face-to-face meetings. This course is 100% online. To help you with time management, I suggest that you prepare a weekly schedule and block specific times for all your courses and other activities like work, rest etc. Sticking to this schedule will help you manage your time effectively.

### **Are There Any Additional Fees?**

This course has no additional fees.

### **How Do I Succeed in this Course?**

If this is your first time taking an online course, you will need to practice time management skills. Below are some tips to help you achieve this. **Examples of what successful students should expect to do in this course:** (modified from 4Faculty.org at Santa Barbara City College)

#### **Responsibilities:**

Successful students, ones who earn A's and B's, follow both oral and written instructions. The syllabus and assignment sheets are the primary sources of instructions in any college course, so successful students read them carefully and refer to them regularly. They also check iCollege daily for class announcements and updates.

#### **Instructions:**

Successful students write down any instructions given orally by the instructor; they also are careful to make sure that they have taken accurate notes and ask questions before due dates. They also read and re-read written instructions and ask questions for clarification as needed. I suggest that you set aside at least 8.5 hours/week to interact with readings, watch videos, write notes on provides PowerPoint slides, review the notes, and work on assignments.

#### **Information:**

Successful students look up information first so that they ask informed questions, not questions they already have the answers to. If they cannot find the answers, they contact the instructor during webex meetings/office hours or by email.

## Course Policies

I have developed several policies that seem to work well in this course. Please review these very closely. You will have an opportunity to voice your opinion on these policies and other aspects of the course during the semester webex office hours.

### Attendance Policy

Students are expected to attend the synchronous pre-lab lecture from 9:00 am -9:50 am via webex.

Class will never be cancelled unless an official from the Chemistry Department gives the class personal notification. Don't assume a note to be enough without checking the Department's office.

The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee)

1. Give a **WF** to all students who are on their rolls but are no longer taking the class and
2. Report the last day the student attended or turned in an assignment. Students who are withdrawn may petition the Departmental Chair for reinstatement into their classes.

### Make-up Assignment Policy

If for some substantial reason you cannot complete modules at the scheduled time, please feel free to contact me by email prior to the due date. *Late submissions/extensions without a valid excuse will result in loss of points (50% of the module points will be deducted in two days after due date/time, it will be counted as zero after two days).*

#### Athletes

If you are an athlete, please email me proper documentation, BEFORE you leave for a game/tournament to be able to make-up the work for that week.

#### Religious Holy Day

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent for the observance of a religious holy day shall be allowed to complete an assignment scheduled for that week within a reasonable time after the absence.

### Grades Policy

If you have any concerns about the way your assignments were graded, for example, if you believe your answer is correct and it was graded incorrectly, please feel free to email me and I will take a look at your answer. I strongly encourage every student to look at all their graded assignments immediately after grades are released. Please email me to schedule a WebEx meeting to go over all the questions you may not have answered correctly.

Final letter grades will only be available on PAWS/GoSolar. They will not be posted on iCollege. Please note that grades cannot be given to students by phone.

### **Course Evaluation**

Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State University. Upon completing the course, please take time to fill out the online course evaluation.

### **Academic Honesty**

**Chemistry Departments Student Integrity Policy:** The Department of Chemistry follows the University policy on academic honesty published in the “Faculty Affairs Handbook” and the “On Campus: The Undergraduate Co-Curricular Affairs Handbook”.

All assignments, quizzes and exams taken must represent the student’s individual, unaided effort.

- 1) Unauthorized sharing/collaboration on assignments using any means including social media/group messaging apps such as GroupMe, Messenger, or Slack constitutes academic dishonesty and will be reported as such to the Department’s Chairman and the Dean’s office for appropriate action.
- 2) KNOWING about such sharing and not reporting it also constitutes academic dishonesty especially if close review of the evidence reveals sufficient evidence that implicates all individuals responsible.
- 3) Please remember that there is no statute of limitations on academic dishonesty, so if it turns out after grades are reported that there was cheating or knowledge of cheating that was unreported, grades can be changed after the fact.

### **GSU Policy Prohibiting Students from Posting Instructor-Generated Materials on External Sites**

The selling, sharing, publishing, presenting, or distributing of instructor-prepared course lecture notes, videos, audio recordings, or any other instructor-produced materials from any course for any commercial purpose is strictly prohibited unless explicit written permission is granted in advance by the course instructor. This includes posting any materials on websites such as Chegg, Course Hero, OneClass, Stuvia, StuDocu and other similar sites. Unauthorized sale or commercial distribution of such material is a violation of the instructor’s intellectual property and the privacy rights of students attending the class, and is prohibited. This policy was approved by the GSU Faculty Senate on August 21, 2020.

## **Other Policies**

### **Students Requiring Testing Accommodations**

Students who wish to request testing accommodations may do so by registering with the [Access & Accommodations Center \(AACE\)](#). Students may only be accommodated upon issuance by AACE of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which an accommodation is sought.

### **FERPA**

In keeping with USG and university policy, this course website will make every effort to maintain the privacy and accuracy of your personal information. Specifically, unless otherwise noted, it will not actively share personal information gathered from the site with anyone except university employees whose responsibilities require access to said records. However, some information collected from the site may be subject to the Georgia Open Records Act. This means that while we do not actively share information, in some cases we may be compelled by law to release information gathered from the site. Also, the site will be managed in compliance with the Family Educational Rights and Privacy Act (FERPA), which prohibits the release of education records without student permission.

### **Basic Needs Statement**

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable us to provide resources that we may possess. The [Embark program at GSU](#) provides resources for students facing homelessness and [Panther's Pantry](#) provides resources for students facing food insecurity.

### **Diversity, Inclusivity, and Respect Syllabus Statement**

Students in this class are encouraged to speak up and participate during class meetings and online class discussions. The students in our class represent a diversity of individual beliefs, backgrounds, and experiences, and therefore, every member of this class must show respect for every other member of this class.