CHM 2211L – Organic Chemistry Laboratory (2 credits)
Room 210 Chemistry/Chemical Biology Building (CCB)
Summer 2022

Teaching Assistant To be assigned

Faculty Coordinator Dr. Tammy A. Davidson, davidson@chem.ufl.edu, Sisler 429B
Please use Canvas or your official UF email for any correspondence

TA Office Hours See Canvas site for schedule (http://elearning.ufl.edu)

Prerequisites The prerequisite for CHM2211L is completion of either CHM2210 or CHM 2212 with a grade of C or higher, or completion of CHM3217. Please note that CHM2211L is intended to accompany either CHM 2211 or CHM2213, and we expect that you have a good working knowledge of the material covered in those lecture courses. Any students taking CHM2211L without concurrent registration in either CHM2211 or CHM2213 (or prior completion) should be prepared to do outside work as needed.

Course Delivery This course will meet in-person in CCB 210 during your scheduled lab sessions. Occasional group work may occur via the Zoom platform. You will require a computer with an internet connection to upload assignments and to complete Knowledge Checks.

Course Objectives The general objectives of this course are to introduce you to common laboratory techniques and equipment used in an organic chemistry laboratory, to help you gain understanding and proficiency in their use, to help you explore the process of doing organic chemistry, and to illustrate representative examples of the useful and important reactions you are learning in CHM 2211 lecture.

COVID-19 Lab Policies

In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus. Visit ONE.UF for screening/testing and vaccination opportunities.
- **If you are sick, stay home.** Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

FIRST DAY OF LAB

The first lab session will be on **Monday, May 16 for class numbers 10583 and 10584**, and on **Tuesday, May 17 for class numbers 10585 and 10586**. A full schedule for the semester is provided at the end of this syllabus.

You must have the following items with you during your first lab session and each lab session thereafter:

- CHM2211L/2200L Lab Manual, 2021-2022 edition (Hayden-McNeil, available at UF bookstores)
- Department approved Safety Glasses/Goggles and proper laboratory attire

You must be wearing department approved safety glasses or goggles and be properly attired to be admitted to the laboratory at all times, even on the first day of lab. Students should wear loose fitting pants and a shirt (with sleeves) that covers the entire torso. There can be no exposed skin at the waist or ankle area. Please refer to the lab manual and the links on the Canvas site for more information on attire and the types of eye protection approved for use in this lab. **Anyone without the necessary materials (listed above), the proper safety glasses/goggles, and appropriate clothing will not be allowed in the lab.**

During your first lab session, you will be assigned to a lab bay, meet your TA, and be assigned to your laboratory workstation. You will need to choose a PIN for the lock on your personal workstation drawer. Be careful and deliberate when entering the code to lock your drawer – you will need to use the same PIN to unlock your drawer, so be careful to enter the code correctly when you lock the drawer.

The Materials and Supplies fee that you pay for this course ($87) covers all reagents/supplies and reasonable breakage/loss of glassware. You are responsible for maintaining all of the glassware and equipment in your personal workstation drawer for the entire semester. Check everything carefully during check-in to make sure all of your equipment is in good working order. Look for star and hairline cracks in your glassware, and check your separatory funnel carefully to make sure there are no leaks. Complete and sign the Safety Form and workstation equipment sheet (found in the "Forms" section of the Lab Manual), and turn them in at the stockroom window to complete the check-in process.

******NOTE: No students will be permitted to check into the lab after May 26******

GRADING

Your grade will be determined from two categories in this course. The first category focuses on the experimental and group work for the course, including completion of pre-lab assignments, the data and observations recorded while working in the lab, the notebook summaries submitted upon completion of the experiment, and the infographic group project. The other portion of your grade will be determined by the lab practical and quizzes that assess your understanding of the concepts covered in the course (both technical and the background chemistry), including laboratory safety and various concepts/techniques from the laboratory experiments. Although it is natural to worry about grades, please don't let it become an obsession that ruins your experience in the lab. The course is designed so that the average grade is a B+, and any student who completes all of the assignments and shows a good attitude in the class will earn at least a C.

Grades will be determined from the following factors and weighted as indicated:

Experimental/Group work	
Pre-Labs	5%
Lab Notebook/Summaries	10%
In-Person Lab Attendance	10%
Infographic Group Project	15%
Participation/TA Evaluation	5%

Assessment of Understanding	
Safety/Policy Quiz	5%
Lab Practical	15%
Knowledge Checks	15%
Lab Exam	20%

The grading scale will be firmly set as follows: A ≥ 89.5%, A- = 86.5-89.4%, B+ = 83.5-86.4%, B = 76.5-83.4%, B- = 72.5-76.4%, C+ = 69.5-72.4%, C = 61.5-69.4%, C- = 58.5-61.4%, D+ = 54.5-58.4%, D = 50-55.4%, E < 50.0%. There will not be a curve beyond that already included in the scale above, and there is no rounding of scores in Canvas. UF grading policies are at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Explanation of Grade Breakdown:

The **Pre-Lab (PL)** grade consists of your Pre-Lab Assignments which are found in the lab manual for each experiment and are graded on a 5 point scale. See schedule for due dates. Upload a PDF scan of your pre-lab to the Assignments section of Canvas at least 30 minutes prior to the beginning of your lab session. **Anyone who has not submitted a pre-lab may not do the lab that day.**

Lab Notebook/Summaries (NB) are the notes you take during lab and your answers to the post-lab questions from the lab manual, and will be graded on a 10 point scale. Upload a PDF scan of the duplicate pages from your notebook to the Assignments section of Canvas. Your score on the online **Spectroscopy Module Quiz** will also count as a notebook grade. See the schedule for specific due dates.

Various assessments that gauge your understanding of the course material are dispersed throughout the semester – see the schedule for specific dates. An **Online Safety/Policy Quiz** will be available on Canvas under the Quizzes tab. The **Lab Practical** will assess your ability to determine a melting point range for an unknown compound accurately and your ability to carry out a synthesis and recrystallization using a procedure that was performed earlier in the semester. More details will be given as the practical date approaches. Four periodic **Knowledge Checks** to gauge understanding will be given in Canvas. The **Lab Exam** will given on campus during an evening assembly exam slot and will evaluate your cumulative knowledge of the concepts/techniques covered in the lab. ***Note: The online safety quiz must be completed on the Canvas site by 11:00pm on Friday, May 20. No extensions.***

The Organic Teaching Laboratory is a hands-on learning environment. The **Participation/TA evaluation** portion of your grade will be determined based on your overall engagement in the laboratory and your contributions towards the group work that complements the experiments you are conducting in the lab. These activities will include preparation and peer review of an **Infographic Group Project**. More details will be provided on the Canvas site.

LAB CLEANLINESS AND LATE PENALTIES

You are expected to attend your scheduled lab session, complete the scheduled activity, clean up your work area, and leave the lab when your lab period ends. Everyone in this course is given the same amount of time to complete the experiments. If you are well prepared, you should have no problem finishing the experiments within the allotted time. **You may not stay late or come in during another lab section to do your experiments.**

You will find a weekly schedule in Module 3 in Canvas and at the end of this syllabus that shows this semester's experiments, along with the due dates for assignments. The following late penalties will be assessed as needed:

Late leaving the lab or messy workstation ..... 1 point deduction from Notebook grade per occurrence
Any assignment turned in late ..... 10% deduction on item for each day late

GRADING DISPUTES AND REQUESTS FOR REGRADES

All pre-lab and notebook assignments are graded by your TA, so you should address any grading disputes directly to your TA no later than one week after your TA posts your score on graded items in Canvas.

The Lab Practical is graded immediately after submission using the same grading rubric for all samples, which ensures consistent evaluation of sample mass and crystal quality. Regrade requests for the Lab Practical must be submitted on a regrade request form (available at the lab stockroom) within one week of the date on which the papers are returned in the lab.

The Lab Exam will be a multiple choice Scantron assessment and must be completed using a pencil. Bubbling errors will not be negotiated. Additionally, a 5% penalty will be applied for failure to bubble in a correct UF ID number or for a missing or incorrect form code. Any grading disputes must be presented within one week of the date on which the scores are posted in Canvas.

Requests for re-grades <u>will not</u> be accepted after the deadline has passed. Please note that the purpose of regrading is to make sure all papers were graded according to the same standard – it is not a means to negotiate for more points. To ensure fairness, the entire assignment will be regraded based on the grading rubric, and grades may go up or down with the regrade. **All re-grade decisions are final.**

COURSE COMMUNICATION POLICY

We will use the Announcements page in Canvas to post information that is relevant to the class as a whole. Please be sure to check the Canvas announcements regularly for updates. If you need to contact your TA or the faculty coordinator, please use the Canvas email tool or your official UF email. We cannot discuss grading or any other course related issues via external email. We will do our best to respond to emails within 24 hours during the work week (Monday-Friday). You should not expect a reply to any email sent after 5pm or over the weekend (or on a holiday) until the next business day.

All students are expected to treat their classmates and instructors with respect, and to follow netiquette guidelines during meetings, Zoom chats, messaging, and emails. For more information, please see the Netiquette Guide on our Canvas site.

ATTENDANCE

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the Undergraduate Catalog at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

This is a hands-on course, and regular attendance and participation is critical to your understanding and overall success. Each laboratory session, you will learn techniques and concepts that will continue to be important throughout the semester. It is essential that you arrive at these sessions on time and prepared for the activity each time that lab meets. Due to space and time constraints, **there are no makeup experiment days in this course. You may not come in during a different lab period to do any experiments.** Therefore, it is important for you to attend your regularly scheduled lab session. Your TA will be taking attendance during each lab period.

In general, acceptable reasons for absence from class include illness, serious family emergencies, court-imposed legal obligations (e.g., jury duty or subpoena), special curricular requirements (e.g., judging trips, field trips,

professional conferences), military obligation, tropical weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Please understand that personal issues with scheduling conflicts, such as work, non-emergency dentist or doctor appointments, extracurricular activities, family vacations, etc., do not justify an excused absence from lab.

If you need to miss a lab session, you must submit a Request for Excused Absence on the Canvas site **no later than one week after the missed lab session** in order to have your attendance excused. You will need to provide documentation (a doctor's note, screenshot of Return to Campus status, University excuse, funeral program, etc.) for anything other than a single day missed due to illness. Any illness that requires you to miss two or more consecutive lab sessions must be explained with proper documentation. **You are responsible for any information presented in the lab even if you are absent**.

Please note: If you miss a Knowledge Check or the Lab Practical, you must contact Dr. Davidson within 24 hours of missing the assignment to request a make-up.

PRE-LAB ASSIGNMENTS AND LABORATORY NOTEBOOK/SUMMARIES

Before you come to your in-person lab session, carefully read through the scheduled experiment and complete your Pre-Lab Assignment (the colored sheet found after each experiment in the lab manual). These Pre-Lab Assignments are designed to ask you to think about the lab procedure to be performed, understand how it relates to other aspects of chemistry, and guide you in your preparation for the experiment. You may need to refer to your lecture text to help you answer some of the questions. Don't wait until just before lab to get prepared – instead, work on your Pre-Lab ahead of time so you can ask your TA for help if you are confused about anything. Turn your pre-lab assignment via upload to Canvas at least 30 minutes prior to the beginning of your in-person lab session. **No one will be permitted to do the lab without a completed Pre-Lab assignment – your TA will ask you to leave the lab.** Additionally, you will find that the labs will go much smoother if you have read through everything ahead of time, so be sure to do a good job in getting organized.

Your laboratory notebook should be an accurate, legible, permanent record of everything that you do in the laboratory. Use the carbonless duplicate sets at the back of your manual, and start each new experiment on a fresh page. Include the title of the experiment, the chemical reaction that is being performed (if applicable), any physical data that is needed in the experiment (such as molar masses, melting points, boiling points, and densities), and any important safety alerts. While you are conducting an experiment, write everything in your notebook. Record your activities (a brief procedure – does not need to be complete sentences) and all data (weights, volumes, reaction times, melting or boiling points, calculations, etc.) and observations (colors, textures, odors, visual indications of reaction, etc.) directly into your notebook as you do your experiment. When you have finished the experiment, you should include a brief summary of your results and make any conclusions that can be drawn from your data. Also, be sure to answer the post-lab questions in your notebook. You will turn in scanned copies of the duplicate pages from your notebook via Canvas upload.

Be sure to consider the following items when preparing your notebook:

- The notebook must be kept in non-erasable, waterproof ink (preferably ballpoint)
- All errors must be crossed out with a single line – no scribbles or white-out!
- Do not skip or tear out pages – cross out with an X if the entire page is incorrect
- Experiments must have titles and include the dates that they are performed
- Include the names of your teammates (if applicable)
- There should be enough detail so that someone with a reasonable understanding of organic chemistry (like your TA) could repeat your work using only your notebook

- Accuracy and truth are more important than a "pristine" entry
- All entries must be made while the experiment is conducted and the duplicate pages must be turned in to the TA for grading after completion of the experiment – see the schedule for due dates

Grading rubrics for the Pre-Labs and Notebooks are provided on Canvas.

A NOTE ON TEAMWORK AND PARTICIPATION

Teamwork is an integral component of doing science. In today's world, researchers depend on collaboration with their colleagues to share ideas, spark creativity, maximize strengths, troubleshoot problems, and share limited resources. The days of lone scientists toiling away in lab by themselves are over. Teaching labs are no exception. The organic lab is an ideal place to exemplify the benefits of working together towards a common goal. Teamwork allows us to explore more sophisticated chemistry and develop a deeper understanding of what is happening in our experiments through active discussion.

You will see that many of our experiments and the infographic project will consist of activities done in small teams. The goal of this approach is that everyone participates in the process, and that can only happen if you are prepared when you come to class. Members of the team are expected to contribute equally, and your TA will be evaluating your participation and that of your teammates throughout the course.

ASSEMBLY EXAM CONFLICTS

The official timeslot for assembly exams during the summer term is for periods E1-E2 (7:00-9:45 pm)**. None of our laboratory sections this summer extend past 6:15pm, so we do not anticipate any conflicts with assembly exams and normal weekly activities.

**Any other exams that are scheduled for outside of their normal class time, but not in an official assembly exam block, are not considered to be assembly exams by the university. We are not required to accommodate test conflicts if they are not official assembly exams as scheduled through the registrar's office. Please discuss makeup exam options with your instructor in the other course before requesting accommodations for this lab.

ACADEMIC HONESTY GUIDELINES

The University of Florida holds its students to the highest standards, and we encourage students to read the University of Florida Student Honor Code and Student Conduct Code (Regulation 4.040), so they are aware of our standards. Any violation of the Student Honor Code will result in a referral the Student Conduct and Conflict Resolution and may result in academic sanctions and further student conduct action. The two greatest threats to the academic integrity of the University of Florida are cheating and plagiarism. Students should be aware of their faculty's policy on collaboration, should understand how to properly cite sources, and should not give nor receive an improper academic advantage in any manner through any medium. You can find more information about UF's Academic Honesty Policy from the Dean of Students Office website at https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/.

INFORMATION FOR STUDENTS WITH DISABILITIES

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, http://www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester. Note that DRC accommodations cannot be applied retroactively.

EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

SCHEDULE OF ACTIVITIES – CHM2211L – SUMMER 2022[†]

Week	Dates	Activity	
1	5/9 – 5/13	No lab sessions this week. You should use this time to read over the syllabus and familiarize yourself with the Canvas site. Be sure to review the content in the Safety and Laboratory Procedures module in Canvas. The Online Safety Quiz will be available beginning May 11.	
2	5/16 – 5/17	Check-in (read pgs. *v-xv* and Chapter 1 in manual and watch Check-In Day videos in Modules on Canvas before lab) *Chapter 2:* Introduction to Melting Point – view video in Modules area before lab	
	5/18 – 5/19	*Chapter 4:* Synthesis of Acetophenetidin (Part 1)	
		Items Due:	• Acetophenetidin Pre-Lab (PL) – upload to Canvas at least 30 minutes prior to start of lab period • **Online Safety Quiz[‡] due on Friday, May 20 by 11:00pm**
3	5/23 – 5/24	*Chapter 4:* Synthesis of Acetophenetidin, cont., Parts 3 and 4 (omit part 2)	
	5/25 – 5/26	*Chapter 3:* Identification of Organic Compounds using Spectroscopy (view Spectroscopy module on Canvas before coming to lab)	
		Items Due:	• Spectroscopy PL • Acetophenetidin Notebook (NB) • **Knowledge Check 1** – opens at 5pm on 5/26, due by 11:00pm on 5/27
*******No students will be permitted to check in after May 26 without an excused absence*******			
4	5/30 – 5/31	**Memorial Day Holiday – no labs Monday or Tuesday (all sections)**	
	6/1 – 6/2	*Chapter 5:* Extraction, Part 2 – watch dye extraction demo videos in Modules area prior to coming to lab	
		Items Due:	• Extraction PL
5	6/6 – 6/7	*Chapter 5:* Extraction, cont., Parts 4 and 5	
		Items Due:	• **Online Spectroscopy Module quiz due on 6/7 at 11:00pm** (counts as a NB grade)
	6/8 – 6/9	*Chapter 9:* Extraction and TLC of Pigments in Spinach Clean glassware for lab practical	
		Items Due:	• Spinach PL • Extraction NB • **Knowledge Check 2** – opens at 5pm on 6/9, due by 11:00pm on 6/10

Week	Dates	Activity	
6	6/13 – 6/14	**Lab Practical (during regular lab session)**	
	6/15 – 6/16	No activities scheduled for this session – enjoy the day off!	
****** UF Summer Break – no classes June 20 - 24*****			
7	6/27 – 6/28	*Chapter 8:* Electrophilic Aromatic Substitution *Chapter 6:* Synthesis and Testing of Biodiesel, day 1	
		Items Due:	• EAS PL • Biodiesel PL • Spinach NB
	6/29 – 6/30	*Chapter 6:* Synthesis and Testing of Biodiesel, day 2 Applications of Organic Chemistry: An Infographic Group Project	
		Items Due:	• **Knowledge Check 3** – opens at 5pm on 6/30, due by 11:00pm on 7/1
8	7/4 – 7/5	**Independence Day holiday – no labs Monday or Tuesday (all sections)**	
	7/6 – 7/7	*Chapter 12:* Making Polymers, Parts 2 and 3 *Chapter 13:* Renewable Block Copolymers, Part 1	
		Items Due:	• Polymers PL • EAS NB • Biodiesel NB
9	7/11 – 7/12	*Chapter 13:* Renewable Block Copolymers, Part 2	
	7/13 – 7/14	*Chapter 13:* Renewable Block Copolymers, Part 3	
		Items Due:	• **Knowledge Check 4** – opens at 5pm on 7/14, due by 11:00pm on 7/15
10	7/18 – 7/19	*Chapter 7:* Synthesis of Fluorescent Coumarin Derivatives, Parts 1 and 2	
		Items Due:	• Polymers NB
	7/20 – 7/21	*Chapter 14:* Dyes and Dyeing, Checkout	
		Items Due:	• Dyes PL • Coumarins NB • **Infographic Group Project due Friday, 7/22 by 11:00pm.** • Peer reviews of Infographic Group Projects assigned at 8:00am on 7/23

Week	Dates	Activity	
11	7/25 – 7/26	Lab Practical makeups – excused absences only. No other lab activities scheduled this week. Finish peer reviews and submit any outstanding assignments.	
	7/27	**Lab Exam – Wednesday, July 27 at 7:00pm. See Canvas site for room locations.**	
	7/28 – 7/29	*Items Due:*	• Dyes NB • **Peer reviews of Infographic Group Projects due by 11:00pm on Friday, July 29** (must complete rubric and leave a comment in order to be considered as completed) • Any late/makeup PL or NB submissions must be made by Friday, July 29 to be considered for grading
12	8/1 – 8/4	No activities scheduled for this week	

†Schedule may change due to unforeseen events – see course Canvas site for any updates.

‡ Available on the Canvas website beginning May 11. You must complete this quiz no later than 11:00pm on May 20. No extensions.