

CHEM 2211L – Organic Chemistry Laboratory (2 credits)
Room 238/238A Leigh Hall
Spring 2017

Teaching Assistant	to be assigned during first laboratory meeting
Faculty Coordinator	Dr. Tammy A. Davidson, Sisler 429B (352) 392-9134, davidson@chem.ufl.edu Please use email if you need to arrange an appointment
Websites	Please see Canvas site (http://elearning.ufl.edu)
Co-/Pre-Requisites	CHM 2211 lecture is a co-requisite for CHM 2211L. In order to be enrolled in CHM 2211L, you must have already completed and passed CHM 2211, or you must be currently registered for CHM 2211. If you drop CHM2211 before completing half of this lab course, you will also need to drop the lab.

CHM 2211L meets twice a week in room 238/238A of Leigh Hall. 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.

**LABS BEGIN ON WEDNESDAY, JANUARY 11 WITH THE 3:00PM SESSION
(ATTEND YOUR REGULAR SESSION)**

On the first day of lab, you must have the following items with you to check into the lab:

- o Lab Manual, 2016-2017 edition (Hayden-McNeil, available at local bookstores)
- o Approved Safety Glasses/Goggles
- o Proper 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. Please check the display case outside of Leigh 238 or links on the Canvas site for 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, or who is inappropriately attired will not be allowed in the lab.

**Please read through the policy information in this syllabus before coming to the first lab
and refer to it to answer your questions throughout the semester.**

FIRST DAY OF LAB – CHECKING IN

******NOTE: No students will be permitted to check into the lab after noon on January 25th.******

On the first day of lab, you will be assigned to a lab bay, meet your TA, and be assigned to your laboratory workstation. The combination to the lock on your personal workstation drawer is written on the back of the index card for your workstation. Please write this combination down in your lab manual. Complete and sign the Safety Form and the Lecture Information sheet (found in the “Forms” section of the Lab Manual), and turn them in with your index card and workstation equipment sheet at the stockroom window.

The lab fee that you pay when you register for this course covers only the expendable items that you use during the semester (chemical reagents and solvents, pipets, filter paper, pH paper, etc.) and does not cover any glassware or equipment that you break, lose, or check out from the stockroom (chromatography columns, thermometers, etc.). At the end of the semester, you will be billed the replacement cost of any items not returned to the stockroom, anything broken during the semester, or missing from your personal workstation drawer or community cabinet. Check everything carefully during check-in – the total value of your glassware and equipment in your personal lab drawer is in excess of \$500. Look for star and hairline cracks in your glassware, and check your condensers and separatory funnel carefully.

The check-in period is the only time that you can replace any broken or missing glassware and equipment in your lab drawer at no cost to you. Unfortunately, any glassware that you break during check-in is not included in the free replacement policy.

GRADING

Your grade will be determined largely by your experimental work done while in the laboratory – the data and observations that you record in your lab notebook, the laboratory summaries you prepare, and your performance on the lab practical. This experimental portion of your grade will be combined with your grades on quizzes and the pre-lab assignments, along with your TA's evaluation of your general work habits and attitude. Although it is natural to worry about grades, please don't let it become an obsession that ruins your experience in the lab. The average grade for this course 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:

Pre-Lab	10%
Lab Notebook/Summaries	20%
Quizzes and Practical	65%
Participation	5%

Prior to assignment of final letter grades for the semester, the overall average of the course will be adjusted to 85%. The grading scale will then be firmly set as follows: A $\geq$ 90.0%, A- = 87.0-89.9%, B+ = 84.0-86.9%, B = 77.0-83.9%, B- = 73.0-76.9%, C+ = 70.0-72.9%, C = 62.0-69.9%, C- = 59.0-61.9%, D+ = 56.0-58.9%, D = 50.0-55.9%, E < 50.0%. There will not be any adjustments beyond that already indicated above. UF policies for assigning grade points can be found on the Registrar's website.

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. Turn in the pre-lab to your TA at the beginning of the lab session. Anyone who has not completed a pre-lab may not do the lab that day. The pre-lab (PL) grade from each experiment will be graded on a 5 point scale.

Lab Notebook/Summaries (NB) are to be submitted to your TA for each experiment done during the semester, and will consist of the notes you take during lab and your answers to the post-lab questions from the lab manual. The duplicate pages from your notebook are due to your TA at the beginning of the lab period that immediately follows completion of the experiment. The online **Spectroscopy Module Quiz** will also count as a notebook grade. See the schedule for specific dates. Each NB will be graded on a 10 point scale.

The **Quizzes and Practical** portion of your grade is made up of five items that are dispersed throughout the semester – see the schedule for specific dates. An **Online Safety Quiz** will be available on Canvas under the Assessments tab. A **Midterm Quiz** will be given during an evening assembly exam slot (see schedule for date) and will cover topics from all previous experiments/activities. The **Lab Practical** will consist of a laboratory experiment for which you will be graded on techniques and lab skills. More details about the practical will be given as the exam date approaches. The **Final Quiz** will also be given in an evening assembly exam slot (see schedule for date) and will cover topics from throughout the semester. Your score on the online safety quiz (10 points), the midterm quiz (25 points), the Lab Practical (30 points), and the final quiz (50 points) will be used to calculate your overall Quiz/Practical grade. ***Note: The online safety quiz must be completed on the Canvas site by 11:00pm on Friday, January 27. No extensions.***

The Organic Teaching Laboratory is a hands-on learning environment. The **Participation** portion of your grade will be determined based on your overall engagement in the laboratory and your contributions towards the discussion aspects of the lab.

GRADING ERRORS AND REQUESTS FOR REGRADES

Any requests for re-grades of the Midterm quiz, the Final Quiz, or the Lab Practical must be submitted in writing using a Re-Grade Request Form (available at the stockroom) and must be submitted to the stockroom window by the deadline listed in the lab schedule. **Requests for re-grades will not be accepted via email or after the deadline has passed.** The stockroom will forward your request on to the Head TA, who will review your paper and make a decision about the re-grade. 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 insure fairness, the entire assignment will be re-graded based on the grading key, and grades may go up or down with the re-grade. Re-grade requests concerning refills, crystal quality, or late penalties will not be accepted. **All re-grade decisions are final.**

LATE PENALTIES

You are expected to attend lab during your scheduled lab period, and leave the lab when your lab period ends. Everyone in this course is given the same amount of time to complete these 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 schedule at the end of this syllabus that shows this semester's experiments, along with the dates of quizzes and due dates for assignments. Any student who is late leaving the lab or turning in an assignment will have the following penalties assessed:

Late leaving the lab.....loss of 1 point on NB grade for that experiment
Any assignment turned in one lab period late.....20% deduction (max. score 8/10)
Any assignment more than one lab period late.....no longer accepted – grade of 0

ATTENDANCE, MISSING LAB, AND DROPPING THE COURSE

Attendance in the organic lab is critical to your success. Each laboratory period, you will learn techniques and concepts that will continue to be important throughout the semester. It is essential that you arrive at the lab on time and prepared for the activity each time that lab meets. Due to space and time constraints, there are **no make-up labs in this course.** **You may not come in during a different lab period to do your experiment.** Therefore, it is important for you to attend your regularly scheduled lab session. Your TA will be taking attendance during each lab period.

Students who must miss lab due to **extreme circumstances beyond their control** may submit a Request for Excused Absence. 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. To have a request considered for approval, you must provide written, verifiable documentation (a doctor's note, University excuse, funeral program, etc.) along with a completed request form (available at the stockroom and on the Canvas site) to the stockroom window. The stockroom will forward your request on to Dr. Davidson, and she will make the final decision about the approval. Please do not email Dr. Davidson to "preview" if your absence will be approved or not. Any request that is not accompanied by proper documentation will be denied. All requests for excused absences must be made no later than 1 week after the absence – after one week, the absence will be considered unexcused. Unexcused absences from lab will result in a grade of zero for the work missed. You are responsible for any information presented in the lab even if you are absent. If you know in advance that you will have to miss a lab session, for instance due to a University-sponsored activity or observation of a religious holiday, please submit your paperwork as soon as possible.

*****Any student who misses more than three lab sessions (excluding religious observances), whether excused or unexcused, will receive a grade of E in the course.*****

If you decide to drop the course before the end of the term, please arrange to check out of your lab drawer **BEFORE** you drop the class. Check with the stockroom manager for a good time to check out.

Please note: If you miss a quiz or the lab practical, you must contact Dr. Davidson within 24 hours of missing the assignment to request a make-up.

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 a lone scientist toiling away in lab by himself 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 our pre-lab discussions will be done in small teams, and many of our experiments are conducted while working with a partner. 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 lab. 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.

PRE-LAB ASSIGNMENTS AND LABORATORY NOTEBOOK/SUMMARIES

Before you come to lab, carefully read through the assigned 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 in to your TA at the beginning of the lab period. 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. (Please don't sit in the hallway outside the lab and copy the pre-lab from your classmates. It just makes you look extremely unprepared and not very serious about your coursework.)

Your laboratory notebook is meant to 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 the duplicate pages from your notebook to your TA at the beginning of the lab period immediately following completion of the experiment.

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

ASSEMBLY EXAM CONFLICTS

Some students enrolled in evening laboratory sections may experience conflicts with their scheduled laboratory session and assembly exams in other courses. The official timeslot for assembly exams during the fall and spring terms is for periods E2-E3 (8:20-10:10 pm)**. You are expected to attend your organic lab until 8:00 pm on the evening of an assembly exam. (Many times, you may be able to finish what you need to do that day without any trouble.) Please let your TA know if you have an assembly exam coming up so he or she can assist you with planning your activities in the lab. The lab instructors for the evening sessions will discuss this further with you during check-in day. Please do not complete a request for approved absence form for an assembly exam given periods E2-E3.

**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.

CELL PHONES, CALCULATORS, AND OTHER ELECTRONIC DEVICES

Cell phones, i-Pods, MP3 players, and any other personal electronic devices are not permitted for use in the laboratory at any time. All cell phones and other devices must be silenced and stored in your storage drawer in the lab entryway. If you must make an emergency call during the lab period, please take your phone into the hallway outside of the lab. When you finish, please return your phone to your drawer. **NOTE:** You will need to use a calculator many times during this course. You should bring a calculator with you to class – we will not let you use the calculator on your cell phone.

ACADEMIC HONESTY GUIDELINES

The academic community of students and faculty at the University of Florida strives to develop, sustain, and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting dishonest behavior in academic pursuits and violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions outlined in the Code of Student Conduct. You can find more information about UF's Academic Honesty Policy from the Dean of Students Office website at <http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php>.

INFORMATION FOR STUDENTS WITH DISABILITIES

The Dean of Students Office provides individualized assistance for students with documented disabilities. Services are based upon student need and the impact of their specific disability. There is no requirement for any student to self-identify as having a disability. However, students requesting classroom accommodations must register with the Dean of Students Office and provide the appropriate documentation verifying their disability. See the website for Disability Resources for more information: <http://www.dso.ufl.edu/drc/>. Please speak with Dr. Davidson early in the term to make arrangements for classroom or testing accommodations.

SCHEDULE OF EXPERIMENTS – CHM2211L – SPRING 2017[†]

Date	Activity	Quizzes/Items Due/Notes
Jan. 11p [§] , 12,13	Check-in, Safety/Policy Lecture (read pgs. v-xv and 1-7 in manual before coming to lab) <i>Chapter 2: Introduction to Melting Point</i> – view video in “Lessons” folder before lab	
Jan. 16, 17, 18a [§]	Labor Day holiday – no labs (all sections)	
Jan. 18p, 19, 20	<i>Chapter 4: Synthesis of Acetophenetidin</i> , Part 1	Acetophenetidin Pre-Lab
Jan. 23, 24, 25a	Acetophenetidin, cont., Parts 2 and 3	
January 25	****No students will be permitted to check in after noon on this date****	
Jan. 25pm, 26, 27	Acetophenetidin, cont., Part 4 <i>Chapter 3: Identification of an Unknown using Spectroscopy</i> (view Spectroscopy module on Canvas before coming to lab)	Spectroscopy Pre-Lab
January 27	*ALL SECTIONS – Online Safety Quiz Due at 11:00 pm – no extensions!!!	
Jan. 30, 31, Feb. 1a	<i>Chapter 5: Extraction</i> (Parts 1, 2, and 3)	Acetophenetidin NB due Extraction Pre-Lab
Feb. 1p, 2, 3	Extraction, cont. (Part 4)	
Feb. 6, 7, 8a	<i>Chapter 6: Isolation of Eugenol from Cloves by Distillation</i>	Distillation PL Due Extraction NB due
Feb. 8p, 9, 10	<i>Chapter 9: Extraction and TLC of Pigments in Spinach</i>	Spinach PL Due EAS NB due
Feb. 13, 14, 15a	<i>Chapter 8: Electrophilic Aromatic Substitution</i>	EAS Pre-Lab Spinach NB due
Feb. 15p, 16, 17	<i>Chapter 10: Acetylation of Ferrocene</i>	Ferrocene PL Due, EAS NB Due
Feb. 20, 21, 22a	Acetylation of Ferrocene (cont.)	
Feb. 22p, 23, 24	<i>Chapter 7: Nucleophilic Addition to a Carbonyl: The Grignard Reaction</i> (no recrystallization)	Grignard PL Due Ferrocene NB Due
Feb. 27, 28, Mar. 1a	Grignard reaction (cont.), as needed	
February 28, 8:20pm	*** ALL SECTIONS – Midterm Quiz *** – see Canvas site for room assignments <i>No in class labs for March 1p, 2, or 3</i>	
March 1	ALL SECTIONS – Online Spectroscopy Module due at 11:00pm (counts as a NB grade)	
March 6-10	Spring Break – no labs (all sections)	
Mar. 13, 14, 15a	<i>Chapter 14: Preparation of Benzocaine: A Multi-Step Organic Synthesis</i> , Parts A and B	Multi-Step PL due Ferrocene NB due
Mar. 15p, 16, 17	Multi-Step continued, Part C	Regrade Deadline: Midterm Quiz
Mar. 20, 21, 22a	Multi-Step – spectroscopic analysis Polymers – Part 1	Polymers handout on Canvas Polymers PL due
Mar. 22p, 23, 24	Polymers – Part 2	Multi-Step NB due
Mar. 27, 28, 29a	Polymers – mechanical testing	
Mar. 29p, 30, 31	Lab Practical	
Apr. 3, 4, 5a	<i>Chapter 13: Dyes and Dyeing</i>	Dyes Pre-Lab Polymers NB due
April 4, 8:20pm	***ALL SECTIONS - Final Quiz in evening*** – see Canvas site for room assignments	
Apr. 5p, 6, 7	Checkout – Note: If you arrive late and your bay has already finished the checkout process, you will be billed a checkout fee.	Regrade Deadline: Lab Practical and Final Quiz Dyes NB due

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

[§]NOTE: An “a” indicates labs beginning before noon on Wednesdays (8:30am and 11:45am sessions), while the “p” indicates labs beginning after noon on Wednesdays (3:00pm and 6:15pm sessions).

[‡]Available on the Canvas website beginning Wednesday, January 11. You must complete this quiz by **11:00pm on January 27**. No extensions.