CHM 2210L Syllabus– Organic Chemistry I Lab (CRN# 80093). **Fall 2015**
College of Arts & Sciences
Department of Chemistry & Physics

Time: Tuesday 11:00 AM – 1:45 PM
Dates: 9/1, 9/15, 9/29, 10/13, 10/27, 10/10, 10/24
Location: BHG-211

Instructor: Dr. Daniel Paull – Assistant Professor of Organic Chemistry
E-mail: dpaull@fgcu.edu **Office:** TBD
Office Hours: Weekly: Monday 9:00—11:00 am
Additionally, we can meet directly after lab, or potentially near the end of lab

THINGS TO KNOW BEFORE THE FIRST DAY

1. buy your goggles and laboratory notebook ASAP - the bookstore tends to run out and this will not be an excuse. see syllabus for details on what to buy
2. Sign the safety contract on canvas.
3. Bring a **print-out** of laboratory the experiment of the day (digital devices will get chemicals on them, and we're using much more nasty chemicals than we ever have before)
4. THE FIRST QUIZ, on day 1 at minute 1, will be entirely focused on safety issues. Make sure to study the safety section below, as well as the safety section in your lab manual. (See below for future quiz guidelines) ***quizzes will only be held at the very beginning of lab***
5. You must have a laboratory notebook. THIS is an acceptable lab book. It must be this book, or an official laboratory research notebook; Composition notebooks are not acceptable!!! the bookstore being out of lab books is no excuse for not having one, and they will probably be out!!!!
6. You must complete the pre-lab write-up in your notebook, prior to lab. I will check for completion and if it's not complete you will receive a zero.
7. You must come in the **proper attire**. This includes bringing GOGGLES (I highly recommend THESE goggles). See rules in syllabus. No exceptions. Yes it's summer in Florida, but you may be turned away for any skin showing below the neck, even if it's only a bit between pants and shoes.
8. Be **on time**. The class starts exactly on Time; quiz is collected at T+5 mins with no exceptions.
9. I am OCD on certain things, like my contact policy, and the exact way the notebook should be

LAB SAFTEY GUIDLINES

You will be exposed to hazardous chemicals in this class. Safety issues will appear in the quizzes. Personal protective equipment is necessary to protect your body. You will **not be permitted** to perform the experiment if any of the following guidelines are not met. If you violate any of the following guidelines, you may be asked to leave the lab. All missed work will receive zero credit. If a student is dismissed for safety violations, he/she will be awarded a zero for the day's work. If he/she dismissed for the second time, he/she will receive an automatic "F" for the course and will be reported to Dean of Students as a "disruptive student". Students may be dismissed from the laboratory for failure to comply with stated safety regulations.

1. Sign the safety contract. You will NOT be able to participate in any lab without first submitting a signed safety contract.
2. Improper conduct or horseplay that may endanger others and will not be tolerated.
3. **LOOK BEFORE YOU STEP!!** Many accidents can be avoided simply by paying extra attention.
4. You bring goggles and we provide gloves; these must be worn at **all** times when dealing with chemicals or if anyone else is using chemicals, or if you have a reaction going. You may sit at the desk side of the lab without goggles on.
5. If you have any safety questions or need help, just ask your instructor **NOT** other students.
6. Shoes that cover the entire foot are required at all times. Absolutely no exceptions will be made to this guideline. Warnings will not be issued.
    a. NO OPEN TOE SHOES (*i.e.*, no sandals, flip-flops, or shoes with holes in the toes such as crocs)
    b. NO SHORTS OR SKIRTS (your entire legs must be covered)
    c. NO MIDRIFF BARING TOPS (your entire torso must be covered at all times, even if you raise your arms to the sky)
    d. No skin showing between your pants and shoes!
7. No musical or other entertainment devices may be used in chemistry lab at any time.
8. Cell phones are not permitted in lab and must be silenced and placed in your bag before you enter lab. If you have a situation which you feel warrants leaving it on, speak with me personally.
9. Using tablets or laptops at the lab bench, even for lab related uses is NOT permitted. These must be kept on the desk half of the lab.

If you are not equipped appropriately and/or heed all safety warnings then you will not be allowed to continue the experiment and will be excused from that lab session (resulting in an absence).

GRADED MATERIALS - all graded materials are INDIVIDUAL, even though you have a lab partner for conducting the experiment.

Pre-lab quizzes (50 pts):

Quizzes will be given every lab day at the beginning of the lab period and will be collected 5 minutes later (***this includes the first class period!*** – the first quiz will focus on safety). You will be quizzed on each lab procedure and any theory that I think you have to know in order to successfully run the experiment. Always read the procedure ***with curiosity***. The quizzes will be on **specifics about the experiment procedure, and possibly safety**. Reading the procedure thoroughly and *inquisitively* and completing the pre-lab write-up will help to study for these quizzes. Always think about the why.

Pre-lab (25% of notebook grade). In your notebook (completed before the experiment) must include:

- A full page (or 2 full pages; no half pages as main notebook must start at top of page)
- Name, date, experiment title at the top of the 1st page
- Purpose statement
- Any reactions that will be performed (if any)
- Mechanisms of those reactions (e- pushing arrows, and intermediates)
- New materials (chemicals) that will be used and safety precautions that must be observed
- A brief overview of the procedure (just a quick paragraph summary)

Main notebook (100 pts). This is done all in your lab notebook. (see below for directions on how to turn this in).

Your notebook must include, after the pre-lab, these sections, in this order:

- At the top of a new page, name/date
- [if applicable] Reaction (structures and reaction arrow with any reagents, solvents, conditions)
- [if applicable] Reagent table (these will be demonstrated in the first lab)

USE CLEAR HEADINGS:

- Procedure (use bullets; full, detailed, and written as you do it with exactly what you do)
- Observations (if they are diagnostic, what conclusions are indicated? E.g., did color develop in a characteristic way? Did the NMR or IR show full conversion? How exactly?)
- Data (all data must appear in this section, even if it is also in the procedure).
- Calculations. Limiting reagent, theoretical yield in grams or mg, %yield (if applicable), and %recovery (if applicable). Make sure calculations are clearly visible, clearly labeled, easily followed, and not messy. If they are messy, then re-write them on the next page and X out the original mess.
- Conclusions – summary
- Appendix – at the end, add any spectra to the electronic file (pictures of the screen is easiest)

Written Discussion (all labs except the last lab) (50 pts):

Required Format: 11 or 12 pt font, 1.15 to 1.5 line spacing, **one page limit**, no title or names!

Formal Report is a ***discussion*** of the following (use these headings):

1. **Concept questions.** Discuss your answers to all of the concept questions. Indicate the question number, do not re-write the question.
2. **Discussion.** Discuss anything about the lab. This includes any conclusions that can be drawn from calculations and other data, what observations indicate, and discussing any

spectroscopy or other diagnostics. This should be written as if you were talking to me about the lab (because you are!)

3. Discuss/explain **5 new things** you learned in this lab. ***No 'how-to' things.*** "I learned how to do an acid/base extraction" is not at all acceptable as it's not specific and basically says nothing at all. A more appropriate version is "I learned that we can purify acidic compounds by dissolving them into basic solution, washing away remaining organics with ether, and recovering the target compound by neutralizing so it is again soluble in organic solvents."

FULL REPORT UPLOAD

For labs prior to the 'final project', you must upload ***one single file*** (.docx, or .pdf) that contains:

1. the written discussion
2. scans/pics of your notebook including prelab (in page-order)
3. append to the end any pictures of IR or NMR spectra that were obtained

The file size must be under 10MB so make sure you aren't taking high res pics/scans. At the same time, each your notebook pages must take up the whole page and must be easily readable. It is your responsibility to insure proper document format and readability. *You must check that you aren't uploading anything blurry or too low resolution – it must be easily readable !!* Insure that notebook pages are in order as well.

Final Paper (250 pts). Upload in **pdf** format **only,** *separate from notebook*

Required Format: (***I have uploaded a template with these specs)***. 11pt Palatino Linotype font, 1.25 line, 1" margin, indented paragraphs (0.2") with 3pt space between paragraphs, justified. **One page *exactly*,!!** (must use every line and no more). This requires precise editing, lots of time, and is a skill well-worth learning!!!!.

Your final paper will be entirely a discourse on 'green chemistry' in general. *It does not have to mention our lab at all.* It is OP ED article all about green chemistry. You should seek out additional sources for information and inspiration. Pretend this will be published (because it might be!)

GRADING: You will be graded on appearance, grammar, following the format and directions, holding my interest, evidence of effort and learning, density, and teaching me something; i.e. whether it's a good OP ED.

**** If your paper is sufficiently insightful, I will work with you to submit it for publishing. My first thought is 'science education oncore.org' but if you have a better idea, let me know in the comments on canvas**** I'm sure you know, but it would not hurt to remind, that a published article in any easily accessible venue is a huge boon to your CV and could easily lead to more career-building possibilities.

Laboratory Conduct, Participation, and Technique:

Your conduct and level of engagement are very important in lab. In particular, **safety** is very much in question when students are not paying attention to what they are doing or to their surroundings. Accidents are almost always preventable by checking everything you do, looking where you are about to move before you move there, and generally taking care. You will be assessed in these areas on each lab day. As you are expected to receive full credit in this area, there is no standard point value associated with this section and negative points will be earned whenever the instructor thinks

they are deserved. This also includes being respectful of everyone in the lab, where chronic disrespect will result in a fail grade for the course and possibly more severe disciplinary action.

More rules:

- Even though you will perform the experiments with a partner(s), all lab reports are to be written **INDIVIDUALLY**. All lab reports are processed through turnitin for plagiarism and the overlap report will be individually assessed and might result in a zero, or in extreme cases, an F in the course and a citation with Academic Affairs.
- Reports will be graded upon how well they are written (scientific language and content), organized (overall appearance), and content.
- I will not grade you on your yield.
- All of the reaction equations, mechanism and chemical structures **must be drawn** in the notebook.
- For any calculations, you must show all your work to receive credit.

Late assignments:

- There are no make-up quizzes
- There are no make-up lab sessions. If you miss an experiment, you can turn in the written discussion, but, for obvious reasons, your notebook must receive no credit. If you have a super legit excuse for missing, then I might be able to work something else out if you notify me in advance.
- If you miss 2 experiments, you will fail the course.
- Assignments other than the final paper turned in 1 minute late will be docked 20% and each additional day will cost an additional 5%.
- The Final Paper will be docked 5% for the first 1 minute late, and 10% for each ***hour*** thereafter.
- Note that "it didn't upload" excuses will NOT be accepted. It is your responsibility to ensure, and verify afterward, that your upload was properly completed. If something went wrong, it is probably because you tried to upload the wrong file format.

Final grades:

Final grades in the course will be based on the following assignment types and their respective weights. The course grades will be determined in the following manner:

A: 100-93%;

A-: 92.99-89%;

B+: 88.99-85%;

B: 84.99-80%;

C+: 79.99-76%;

C: 75.99-70%;

D: 69.99-60%; F: 59.99% and below. All of your grades will be available on Canvas for you to view – any errors must be reported immediately.

The point totals breakdown thus:

Assignment type:	**Points**
Pre-lab Quizzes (lowest *non-zero* score is dropped)	300 pts
Notebook (including prelab grade, 100/ea)	700 pts
Written Discussions (50/ea)	300 pts
Final Paper	250 pts
TOTAL (subject to change)	**1350**

ATTENDANCE POLICY

There are only seven experiments during the semester it is imperative that you be present during every lab period. **There are no make-ups for any experiment.**

- Pre-lab quizzes will be assigned at the beginning of class. If you are late for class you will not be given additional time to complete the quiz.
- If you miss one lab you will receive no credit for that lab and will not be allowed to turn in the relevant report.
- If you miss **two** labs, you will receive an automatic "F" for the course with no exceptions.

Tardiness: Students arriving after the experiment discussion by the instructor may or may not be permitted to conduct the experiments. This depends on the situation and the experiment. This generally means that arriving 15 minutes late will REALLY hurt your grade. Students arriving slightly late will miss part of the quiz time with no make-up.

CONTACT POLICY – I require a ***formal / professional message*** or I will not respond

- Address me as Dr. Paull, and use impeccable grammar, structure, salutations, and signature
- If it looks like a tweet or txt type messages make me mad and *might result in negative points*
- If it's not formal and professional, I won't read it and won't respond
- If you message me through Canvas, you must copy any previous communication into the message – it doesn't do that automatically. This is one reason you should use email instead!

MATERIALS NEEDED

- Lab manuals (Available to download on Canvas). Must have print-out of the day's lab!!
- Laboratory Notebook: any official laboratory notebook. I recommend THIS, and this or similar is also acceptable. Your notebook does not need to have carbon-copy pages but must be made to be a lab notebook. A good gauge is 1. Having page numbers, 2. No perforated or hole-punched pages, 3. Permanent binding, 4. Bonus if it says 'lab' somewhere on it.
- Safety glasses/goggles with splash protection. I highly recommend THESE goggles. If you buy cheaper or from the bookstore, you'll be disappointed. NOTE that I will allow lesser safety glasses in Orgo I lab (like these glasses, which are unacceptable for Orgo II), but in orgo II, we

will be working with much more dangerous chemicals and you must have the full splash protection and full goggles. If you are not continuing to Irgo II, then you will prefer these glasses. If you do buy elsewhere, and you are getting Orgo II ready goggles, they must be OSHA splash rated. This means that the entire bottom seals to your face and the vents are only at the top.

COURSE DESCRIPTION

CHM 2210L, a one credit-hour course, is known as Organic Chemistry I Laboratory. It is offered by the College of Arts & Sciences, intended for science majors. Organic Chemistry I Lecture (CHM 2210) is a co-requisite of this course. The course is on the FGCU's CANVAS website. You can access and download this syllabus and posted lab materials at HTTP://elearning.fgcu.edu.

The experiments continue to develop expertise with organic chemistry techniques and familiarity with equipment and glassware commonly used in organic chemistry. Some of the experiments illustrate concepts discussed in the lecture class such as aromatic substitution reactions and carbonyl chemistry.

PREREQUISITE

CHM 1046 with a minimum grade of C and CHM 1046L with a minimum grade of C or CHM 1046C with a minimum grade of C.

COURSE OBJECTIVES AND STUDENT LEARNING OUTCOMES

The development of critical thinking and problem solving skills is emphasized in this course. The following outlines what the student should know and be able to do upon completion of the course.

- Perform and justify the separation techniques used in purifying organic compounds.
- Determine the melting point of a solid organic compound
- Obtain the IR and NMR spectra for liquid organic compounds.
- Perform microscale organic syntheses that involve reflux, distillation, and vacuum filtration techniques.
- Calculate the percent yield/percent recovery obtained for various organic syntheses and separation experiments.

HONOR CODE

Any incident of cheating will result in a "0" grade for that assignment and possibly an "F" grade for the entire course. This includes plagiarism. In addition, you will be referred to the Judicial Department of the Dean of Students' Office for violation of the Student Code of Conduct. All students are expected to study this document which outlines their responsibilities and consequences for violations of the policy. The FGCU Student Guidebook is available online at http://studentservices.fgcu.edu/judicialaffairs/new.html

Although benchwork is often completed in groups, Formal Written Reports are individual.

SUPPLEMENTAL INSTRUCTION

It is highly recommended that you take advantage of the free tutoring available through the Center for Academic Achievement: http://www.fgcu.edu/caa

ACADEMIC BEHAVIOR STANDARDS AND ACADEMIC DISHONESTY

All students are expected to demonstrate honesty in their academic pursuits. The university policies regarding issues of honesty can be found in the FGCU Student Guidebook under the *Student Code of Conduct* and *Policies and Procedures* sections. All students are expected to study this document which outlines their responsibilities and consequences for violations of the policy. The FGCU Student Guidebook is available online at http://studentservices.fgcu.edu/judicialaffairs/new.html

DISABILITY ACCOMMODATIONS SERVICES

Florida Gulf Coast University, in accordance with the Americans with Disabilities Act and the university's guiding principles, will provide classroom and academic accommodations to students with documented disabilities. If you need to request an accommodation in this class due to a disability, or you suspect that your academic performance is affected by a disability, please contact the Office of Adaptive Services. The Office of Adaptive Services is located in Howard Hall 137.

STUDENT OBSERVANCE OF RELIGIOUS HOLIDAYS

All students at Florida Gulf Coast University have a right to expect that the University will reasonably accommodate their religious observances, practices, and beliefs. Students, upon prior notification to their instructors, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith. Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence. Students shall not be penalized due to absence from class or other scheduled academic activity because of religious observances. Where practicable, major examinations, major assignments, and University ceremonies will not be scheduled on a major religious holy day. A student who is to be excused from class for a religious observance is not required to provide a second party certification of the reason for the absence. The full FGCU policy is available online at http://www.fgcu.edu/generalcounsel/policies-view.asp

SYLLABUS CHANGE POLICY

Adequate notification will be given if changes to this syllabus are to be made. Any alternations to this syllabus will be announced in class.

SYLLABUS STATEMENT FOR CENTER FOR ACADEMIC ACHIEVEMENT

The center for academic achievement (CAA) provides academic support service to all FGCU students. Students can take advantage of our free peer tutoring and supplemental instruction sessions for lower-level science course, as well as workshops to facilitate the development of skill necessary for college success. For more information, please visit CAA in Library 103 or call at (239) 590-7906. The CAA website is www.fgcu.edu/caa.

CHM 2210L – LAB SCHEDULE

See canvas for due dates. Quiz dates mark our lab dates. Reports are due at the specific time the assignment requires, and are not always