Chemistry 371/371L Fall 2022

**COURSE TITLE** Chemical Synthesis and Characterization Laboratory

**DATES, TIMES, AND LOCATION OF COURSE MEETING**
M 1:00-1:50pm, SSMB 327 (Section 1, 13181)
M 2:00-4:30pm, T 1:00-4:30pm SSMB 333 (Section 1, 13182)
W 1:00-1:50pm, SSMB 327 (Section 2, 16643)
W 2:00-4:30pm, T 1:40-5:10pm SSMB 333 (Section 2, 16644)

**NAME OF INSTRUCTOR**
Dr. Timothy Barker
Office: 312 School of Science and Math Building (SSMB)
Phone: (843)953-7182
Email: barkertj@cofc.edu (this is the best way to contact me)

**OFFICE HOURS** (312 SSMB)
by appointment

**TEXTS** (optional)
2. Elements of Style, Strunk & White, any edition, but 3rd or higher is recommended. Used copies can be purchased online for less than $1.

**Student Learning Outcomes:**
- Demonstrate awareness of and compliance with safety standards within the organic chemistry laboratory
- Utilize library resources (*e.g.* SciFinder, Web of Science, books, journals) to design and perform organic experiments based on precedent from the primary literature
- Demonstrate proficiency with purification (*e.g.* recrystallize, distill, chromatograph) and characterization (*e.g.* NMR, IR, MS) of products
- Write a report in the style of a journal article that properly details and analyzes experimental results

**Prerequisites:** CHEM 220, CHEM 220L, CHEM 232 and CHEM 232L
**Co-requisites:** You must be enrolled in both CHEM 371 and 371L

**Lab Safety:** The departmental and SSM School wide safety policy will be followed. The risks in the chemical synthesis and characterization laboratory are higher than in introductory organic chemistry labs. The chemicals are more hazardous, the techniques are more likely to cause harm if not performed properly and with caution. Lab coats, goggles and gloves are required at all times in the synthesis laboratory room. Students should carry current health insurance coverage
identification cards with them at all times in the lab. Students will need to pass a safety quiz administered on OAKS before beginning work in the laboratory.

**GRADING** Final course grades will be assigned based on the following distribution:
- Instrument Certification – 5%
- Spectral and other assignments – 7%
- Lab Reports – 60%
- Final Exam – 20%
- Deportment – 8%

**Grading Scale:**
- A 92-100
- A- 90-91.99
- B+ 88-89.99
- B 82-87.99
- B- 80-81.99
- C+ 78-79.99
- C 72-77.99
- C- 70-71.99
- D 60-69.99
- F below 60

**Formal Reports:** Lab reports must be in the format and style of a “Note” that might be submitted to the *Journal of Organic Chemistry*. The formal reports will be evaluated and the student will be given comments and justification for the evaluation received.

For the first formal report, students must revise the document based on comments and then resubmit the formal report for a second grade. The grade for the first lab report will be the average of the two grades received for the report. If a report is not resubmitted before the announced deadline, then a grade 20 points lower than the initial grade will automatically be assigned as the re-grade evaluation.

For the remaining reports, there are no resubmissions.

**Final Exam:**
The final exam is cumulative and will be held on **Wednesday December 7th from 1-3pm**. More details to follow.

**Virtual Lab Breakage Fee:** At the start of the semester each student has a Virtual Breakage Credit (VBC) of 200 points. Each item broken or lost during the semester will count as a deduction from a student’s VBC equal to 1/2 of the list price of the broken or missing item, up to a maximum deduction per item of no more than 25 points. Any balance of VBC points accumulated by a student during the semester that is less than 25 points in credit will result in a deduction to the student’s deportment grade for the course.
Notebook: Each student is required to keep a written laboratory notebook. The written notebook must be a permanently bound composition style book, where all pages are numbered (first to last) and the first five pages are reserved for a Table of Contents. The Table of Contents must be updated regularly. The written notebook must be written in ball point pen. The student must record date and time stamps associated with each entry in the style as described during the Check In. The written notebook must be turned in to the instructor as part of the final report and is subject to random inspection and evaluation throughout the entire semester.

Deportment/Laboratory Clean Up: Acceptable student deportment requires regular attendance, safe conduct, awareness of safety concerns, and adequate preparation before conducting laboratory work. Students will begin with a Deportment grade of 100, and deductions from that will be based on the end of semester VBC points and any daily deductions incurred. The Deportment grade can be a negative value. You are responsible for cleaning up all the glassware you use on the day that you use it. You are responsible for keeping your hood, which may be shared by another student in a different section, neat and clean.

Students will be assigned the duty of conducting a Laboratory Clean & Readiness report by inspecting the lab, correcting problems that can be corrected and making note of concerns that need to be corrected by others. The students conducting the report must be the last students to leave the laboratory on the day the report is made.

Availability of Chemicals, Glassware, and Supplies: Students are not allowed to bring in chemicals, glassware or supplies from other laboratory rooms (teaching labs or research labs) into the Chemical Synthesis and Characterization laboratory room without explicit permission of the instructor. Chemicals, glassware and supplies from the CHEM 371 laboratory may not be taken out of the CHEM 371 laboratory rooms without explicit permission of the instructor. When something is missing or supply is running low, inform the instructor.

POLICY ON:
Attendance: You should expect to spend a minimum of 7 hours a week in the classroom or laboratory. If you do not feel well, do not come to lab. If you are required to self-isolate and/or quarantine, do not come to lab. If due to illness you get behind on your lab work, I will work with you to find a mutually convenient time outside of our regular class for you to make up your lab work. No wet chemistry laboratory work related to this course is allowed after 6:00 pm or on the weekends. Even after being certified to use instrumentation, no use of instrumentation is allowed for this course unless a faculty or staff member who is willing and able to troubleshoot is in SSMB while the instrument is being used.
Late Work: Assignments and lab reports are due the day assigned.
Extensions: Extensions will be granted when extenuating circumstances prevent the student from attending class or completing assignments on time.
SNAP: Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged.
Licensed Software & Website Resources:

- Scifinder Scholar (for literature searches)
- Web of Science (for literature searches)
- EndNote (for compiling and reporting literature references)
- ACS Journals (for access to and search of ACS journals)
- Science Direct (for access to and search of Elsevier journals)
- Mestrenova (for NMR FID and GCMS processing and printing)
- ChemBioDraw (to draw structures & glassware, name, predict spectra, molecular model)


“Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students can find the complete Honor Code and all related processes in the Student Handbook at: [http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php](http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php)

OAKS, including Gradebook, will be used for this course throughout the semester to provide the syllabus and class materials and grades for each assignment, which will be regularly posted.

Inclement Weather, Pandemic or Substantial Interruption of Instruction

If in-person classes are suspended, faculty will announce to their students a detailed plan for a change in modality to ensure the continuity of learning. All students must have access to a computer equipped with a web camera, microphone, and Internet access. Resources are available to provide students with these essential tools.

The syllabus is subject to change with appropriate notice.