Note that this syllabus is subject to change with proper notification by the instructor.

Spring 2022 CHEM 111L Principles of Chemistry Laboratory

- All labs are taught in SSMB 141.

<table>
<thead>
<tr>
<th>Section</th>
<th>Day</th>
<th>Time</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>L01</td>
<td>T</td>
<td>12:30 pm-3:30 pm</td>
<td>Krantzman</td>
</tr>
<tr>
<td>L02</td>
<td>T</td>
<td>4:00 pm - 7:00 pm</td>
<td>Jafri</td>
</tr>
<tr>
<td>L04</td>
<td>W</td>
<td>2:15 pm - 5:15 pm</td>
<td>Krantzman</td>
</tr>
<tr>
<td>L05</td>
<td>W</td>
<td>6:00 pm - 9:00 pm</td>
<td>Squiggins</td>
</tr>
<tr>
<td>L06</td>
<td>R</td>
<td>12:30 pm - 3:30 pm</td>
<td>Guirgis</td>
</tr>
<tr>
<td>L07</td>
<td>R</td>
<td>4:00 pm - 7:00 pm</td>
<td>Jafri</td>
</tr>
</tbody>
</table>

A laboratory course designed to introduce the student to the application of the scientific method in solving chemical problems and to acquaint him or her with specific tools and techniques used in the chemistry laboratory, while reinforcing and illustrating concepts encountered in lecture.

Co-requisites and Prerequisites

Chemistry 111 is a co-requisite for Chem 111L. If you have passed the lab, you do NOT need to retake the lab in order to retake the lecture; e-mail the department chair, Dr. Deavor (DeavorJ@cofc.edu), before or during the Drop/Add period to correct your schedule if this applies to you.

### Required Materials

#### Lab Manual
Chemistry 111L Principles of Chemistry Laboratory Manual
Available for purchase at the College of Charleston bookstore.

#### Lab Notebook
Students must purchase a composition book (sewn pages) to serve as their lab notebook.

#### Required Software:

### Personal Protective Equipment

- Safety glasses/googles
- Nitrile gloves
- Lab coat
- Mask

### Student Learning Outcomes

#### Student Learning Outcomes for Chem 111 Lab
- Develop an understanding of the scientific method in a chemistry laboratory setting.
- Employ mathematical calculations to assess acquired data.
- Synthesize laboratory experiments to determine the purpose, results, and conclusions of a scientific study.

#### Student Learning Outcomes for Natural Sciences General Education Courses *

The sequence CHEM 111/112 and associated labs satisfy the 8-hour natural science requirement of the College. In this sequence
- Students apply physical/natural principles to analyze and solve problems.
- Students explain how science impacts society.

*These learning outcomes will be assessed in the second course of the year-long natural science sequence.
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## Evaluation of Student Performance

### Grading Scale

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Letter Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100</td>
<td>B-</td>
<td>80-82</td>
<td>D+</td>
<td>72</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
<td>C+</td>
<td>78-79</td>
<td>D</td>
<td>71</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
<td>C</td>
<td>75-77</td>
<td>D-</td>
<td>70</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
<td>C-</td>
<td>73-74</td>
<td>F</td>
<td>&lt;70</td>
</tr>
</tbody>
</table>

### Pre-Lab Quizzes 10 %
- A pre-lab quiz for each experiment will be available on OAKS. The quiz is due before the beginning of the lab period for the experiment. Students have a time limit of 30 minutes to complete the quiz and a total of 2 attempts. The highest grade on the three attempts will be recorded.

### Laboratory Reports 50 %
- The lab report for each experiment is due at the beginning of the next lab period. Details of the format of the lab report will be discussed in class.
- Late lab reports will receive the following point deduction:
  - 10 % (from start of lab until the end of the day)
  - 25 % (second day)
  - 50 % (third day)
  - 100 % (thereafter)

### Lab Notebook 15 %
- You are expected to keep a lab notebook in a composition book with sewn pages. The format and content of the lab notebook is discussed in the lab manual.
- You need to write the pre-lab notebook (objectives, materials and equipment, and procedure) before coming to lab. The pre-lab notebook must be scanned in as a single pdf document and submitted to the Dropbox folder by the morning (9 am) of the day of your lab period so that your instructor has time to read and review it before the lab start.
- All data must be recorded in your lab notebook as soon as it is generated. All calculations should be shown in the laboratory notebook so that the instructor can follow your logic and check for errors. Your laboratory instructor will check, initial and date your laboratory notebook at the end of each experiment.

### Deportment 5 %
- Your deportment grade is based on your adherence to lab safety protocols and how you leave your work area. You are expected to clean your glassware and equipment and return it to your law drawers. All chemicals and equipment should be returned to their original position and your work area should be clean.

*Your professor will check your lab notebook and your work area at the end of the class period before you are allowed to leave the laboratory.*

### Exams 20 %
- A midterm and final exam will be administered during the scheduled class time. Details will be discussed in class.
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**Class Policies**

All students in Chem 111L must adhere to the policies included in the Lab Manual. These include the School of Sciences and Mathematics Safety Policy and Procedures, the Policy on Scientific Integrity, and the Procedure for Leaving the Laboratory. Additionally, all students must adhere to the Honor Code and Code of Conduct college policies regarding academic integrity.

### Attendance Policy

- Labs are experiential learning courses that emphasize the scientific method and data interpretation and they provide training in essential technical skills for chemists and other scientists. Furthermore, the technical lab skills presented in one course are assumed to be mastered in subsequent chemistry courses. Thus, attendance in all lab periods is mandatory.

- That being said, **do not attend lab if you are sick or under quarantine**. If you have to miss lab, **you must notify your professor before** the beginning of the scheduled lab period. Be prepared for your instructor to ask you to share documentation of illness. In order to be eligible to do a makeup assignment for the lab, you must notify your professor before the beginning of the lab period. If you do not, you will be assigned a grade of **zero** for all items due that week.

- Because excessive (>2 missed lab periods) absences from lab will diminish your lab experience and are a significant strain on your instructor, **please do not request these accommodations unless absolutely necessary**. Again, be prepared for your instructor to ask you to share documentation of illness.

- **If you miss more than two weeks of lab for any reason, you will be assigned zeros** for all items due in any additional weeks you miss. If this happens, you are encouraged to discuss with your professor the option of withdrawing from the class and retaking it in a future semester when you are able to fully participate in the class.

### Lab Safety

- The safety guidelines are outlined in the manual and will be discussed at the mandatory safety training session, but there are several rules that will be of paramount importance:

  1. Wear clothing that completely covers all skin below your neck. If any skin on your legs, ankles, or feet is not covered completely, you will not be allowed to work in the lab.
  2. No sandals, flip flops, or other open-toed shoes.
  3. Laboratory coats must be worn at all times.
  4. Safety glasses/goggles must be worn at all times when chemicals are in use.
  5. Gloves must be worn when handling chemicals. You will need to purchase nitrile gloves at the bookstore or a pharmacy and bring multiple pairs to lab each week.

- If you **come to lab without the appropriate PPE** (most often exposed skin around ankles), you will need to correct it before you are allowed in the lab. In such cases, you will receive a zero for that week’s quiz.

- Failure to adhere to safety rules will result in dismissal from the laboratory with a grade of zero for that laboratory period.
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**Academic Integrity Statement**

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://deanofstudents.cofc.edu/honor-system/studenthandbook/](http://deanofstudents.cofc.edu/honor-system/studenthandbook/).

**Accommodations for Students with Disabilities**

This College abides by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. If you have a documented disability that may have some impact on your work in this class and for which you may require accommodations, please see an administrator at the Center of Disability Services/SNAP, 843.953.1431 or me so that such accommodation may be arranged.

**Attendance Verification**

Only students officially registered (graded or auditing) for this course may attend class. During the week following the drop/add deadline, the professor will verify student enrollments in this course. Any student appearing on the class roll but determined not to have attended the class even once will be removed.

**OAKS**

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.
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**Schedule of Lab Periods**

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
</tr>
</thead>
</table>
| January 11-January 13 | Safety  
  Introduction to Calculations with Excel                                  |
| January 18-January 20 | Experiment 1  
  Experimental Precision and Uncertainty                                      |
| January 25-January 27 | Experiment 2  
  Thin Layer Chromatography of Dyes                                             |
| February 1-February 3 | Experiment 3  
  Chemical and Physical Measurements: Drug Laboratory                           |
| February 8-February 10| Experiment 5  
  Absorbance of Light vs. Concentration                                         |
| February 15-February 17| Experiment 6  
  Periodic Trends: Densities of Group 6 Metals                                   |
| February 22-February 24| Midterm Exam                                                             |
| March 1-March 3       | Experiment 7  
  Percent Composition of Potassium Chlorate                                     |
|                       | March 6-March 12  
  Spring Break                                                                |
| March 15-March 17     | Experiment 8  
  Molecular Geometry and Polarity                                               |
| March 22-March 24     | Experiment 9  
  Limiting Reactants: Synthesis and Pyrolysis of Transition Metal              |
| March 29-March 31     | Experiment 10  
  Qualitative Analysis: Testing the Solubility Rules                            |
| April 5-April 7       | Experiment 11  
  Acid-Base Titrations: Acetic Acid in Vinegar                                  |
| April 12-April 14     | Experiment 12  
  Evaluating the Cost Effectiveness of Antacids                                 |
| April 19-April 21     | Final Exam                                                               |
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**COVID-19 Reminders**

For the health and safety of yourself and those around you, you are **required to wear a face-covering over both your nose and mouth while inside all campus buildings** (you should do the same inside other public buildings). This mask should fit well; there should not be gaps anywhere between your face and the mask. Also remember that **students, faculty, and staff should not come to campus when they feel unwell.**


The CDC’s guidance has changed over the course of the pandemic as new data and new variants have emerged; check the latest info for yourself: [https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html](https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html) and find CofC’s info here: [https://cofc.edu/back-on-the-bricks/](https://cofc.edu/back-on-the-bricks/).

The easiest thing to do is to contact Student Health about your particular situation to get their guidance: [https://studenthealth.cofc.edu/](https://studenthealth.cofc.edu/) If you cannot attend class due to a COVID-related situation, contact your instructors **as soon as possible** for help in making up assignments.

CofC Student Health requests that you inform them of positive COVID testing results and any close contact with someone who is COVID-positive, so they can monitor the campus health situation and give you personalized healthcare. CofC holds regular free testing events on campus for anyone in the campus community to get tested for COVID infection. CofC also holds free vaccination events on campus for all students. Vaccination remains the best way to protect yourself, your family, and those around you.