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

Course Instructor: Thomas McFadden  E-mail: tmcfadde@cofc.edu

Office Hours:  Zoom office hours. Monday 1-2 PM, Wednesday 1-2 PM and by appointment

Course Time and Location:  Wednesdays from 4:00-7:00 PM. Room 141 SSMB

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.

**Required Materials**

**Lab Manual:** There will not be a print lab manual for this course. The lab manual will be posted on OAKS as a pdf document.

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

**Personal Protective Equipment**
- Safety glasses/googles
- Nitrile gloves
- Lab coat
- Mask

**Technology**
- Computer with reliable highspeed internet access.
- Scientific calculator
- An App such as AdobeScan to scan in multiple pages of handwritten work into a pdf document

**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 %**
- Quizzes are given at the beginning of the class period, and it is your responsibility to arrive in lab on time. If you are late and miss the quiz, you will get a zero for the quiz grade.

**Laboratory Reports 50 %**
- Each week’s lab report will consist of the following sections:
  1. Typed abstract. The format and content of abstracts is discussed in the lab manual.
  2. Report sheet. The report sheet for each experiment will be posted on OAKS.
  3. Reflection questions. The reflection questions are on the last page of the report sheet.

*The lab report must be formatted as a pdf document and submitted to the Dropbox folder before the beginning of the next week’s class period. Lab reports in other formats (i.e. Word) will not be accepted.*

- 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 and Deportment (20 %)**
- 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 before the beginning of the lab period.
- The post-lab notebook (data, calculations and results) must be scanned in as a single pdf document and submitted to the Dropbox folder within an hour of the end of the lab period.
- 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**. If you are unable to e-mail your professor, ask a roommate or family member to e-mail the professor on your behalf. 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.

• Chemistry lab requires students to participate in hands-on activities to master the material. You learn by doing the experiments in-person in the lab. **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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**Honor Code and Academic Integrity**

One of the core values of the College is academic integrity. This course is conducted under the Honor Code ([http://deanofstudents.cofc.edu/policies-and-procedures/honor-code-and-code-of-conduct.php](http://deanofstudents.cofc.edu/policies-and-procedures/honor-code-and-code-of-conduct.php)) of the College of Charleston. Students at the College are bound by honor and by their acceptance of admission to the College to abide by the Code and to report violations. Faculty members are required to report violations of the Honor Code or Code of Conduct to the Office of Student Affairs. Conviction of an Honor Code violation in this class will result in the grade of "F" for the course. Please consult the department's Policy on Scientific Integrity ([http://chemistry.cofc.edu](http://chemistry.cofc.edu)).

- Plagiarism will not be tolerated. **You are responsible for collecting, analyzing, and writing up your own lab report.**

  It will be considered academic misconduct to:

  1. Falsify or use another’s data,
  2. Use another’s analysis
  3. Turn in any part of another’s lab report.

- **Both parties** involved will receive a zero for the work and will be reported to the Honor Board.

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**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](http://deanofstudents.cofc.edu/policies-and-procedures/honor-code-and-code-of-conduct.php), 843.953.1431 or me so that such accommodation may be arranged.

**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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**Center for Student Learning**
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The Center for Student Learning’s (CSL) academic support services provide assistance in study strategies, speaking & writing skills, and course content. Services include tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at http://csl.cofc.edu.

**Schedule of Lab Periods**

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 12-14</td>
<td>Safety&lt;br&gt;Introduction to Calculations with Excel</td>
</tr>
<tr>
<td>January 19-21</td>
<td>Experiment 1&lt;br&gt;Experimental Precision and Uncertainty</td>
</tr>
<tr>
<td>January 26-28</td>
<td>Experiment 2&lt;br&gt;Thin Layer Chromatography of Dyes</td>
</tr>
<tr>
<td>February 2-4</td>
<td>Experiment 3&lt;br&gt;Chemical and Physical Measurements: Drug Laboratory</td>
</tr>
<tr>
<td>February 9-11</td>
<td>Experiment 4&lt;br&gt;Periodic Trends: Density of Group 6 Metals</td>
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<tr>
<td>February 16-18</td>
<td>Experiment 5&lt;br&gt;Percent Composition of Potassium Chlorate</td>
</tr>
<tr>
<td>February 23-25</td>
<td><strong>Midterm Exam</strong></td>
</tr>
<tr>
<td>March 2-4</td>
<td>No Class</td>
</tr>
<tr>
<td>March 9-11</td>
<td>Experiment 6&lt;br&gt;Molecular Geometry and Polarity</td>
</tr>
<tr>
<td>March 16-18</td>
<td>Experiment 7&lt;br&gt;Limiting Reactants: Synthesis and Pyrolysis of Transition Metal Oxalates</td>
</tr>
<tr>
<td>March 23-25</td>
<td>Experiment 8&lt;br&gt;Qualitative Analysis: Testing the Solubility Rules</td>
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<tr>
<td>March 30-April 1</td>
<td>Experiment 9&lt;br&gt;Acid-Base Titrations: Acetic Acid in Vinegar</td>
</tr>
<tr>
<td>April 6-8</td>
<td>Experiment 10&lt;br&gt;Evaluating the Cost Effectiveness of Acids</td>
</tr>
<tr>
<td>April 13-15</td>
<td><strong>Final Exam</strong></td>
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