I. Logistics

Instructor: Professor Betsy Stone  
Chemistry Building W376  
Tel. (319) 384-1863  
betsy-stone@uiowa.edu

Lecture  
Location/Time: Chemistry Building E264  
Monday and Wednesday 1:30 – 2:20 PM

Laboratory  
Location/Time: Chemistry Building E440  
Monday and Wednesday 2:30 – 5:20 PM

Instructor: Professor Betsy Stone  
Office Hours: Tuesday and Wednesday 10:00-11:30 AM (W376 CB)  
By appointment

Teaching Assistants (TAs)  
Chengxuan Guo (chengxuan-guo@uiowa.edu)  
Office hours: Tuesday 4:30-5:30 PM and Thursday 8:30-9:30 AM (E208 CB)

Ryan Golkowski (ryan-golkowski@uiowa.edu)  
Office hours: Monday and Wednesday 11:30 AM – 12:30 PM (E208 CB)

II. Course Matters

Course Objective: The goal of this course is for students to learn how to make fundamental analytical measurements in the laboratory. The course will emphasize measurement theory, practical skills, and laboratory safety. Course objectives include volumetric analysis, spectrophotometry, chromatographic separations, mass spectrometry, standardization, calibration, error analysis, hypothesis testing, modeling, graphical representation, and discussion of results.

Course Structure: The course is divided into lecture and laboratory sections. Lectures will cover the basic principles of the experiments, statistics, and data analysis. Eleven laboratory experiments will provide a practical setting to conduct experiments and analyze data. Initially, the course material will focus on general procedures for analyzing and presenting data along with learning laboratory skills. Chemical separations and instrumental methods will be featured in later class assignments.
Textbook
Quantitative Chemical Analysis, 9th edition (2016); Daniel C. Harris, W. H. Freeman & Co. (Note: The 7th or 8th editions may also be used, but students must refer to the 9th edition for the correct sections.)

Course website
http://icon.uiowa.edu

Policy on Class Attendance
Students are required to attend and arrive promptly for each laboratory session. Arriving late to laboratory sessions is not permitted. Failure to perform all laboratory experiments will result in a grade of incomplete for the course. Attendance at lecture is strongly encouraged and points in the grading scheme are allocated for lecture attendance.

In the case of an excusable absence (e.g. illness, mandatory religious obligation, certain University activities, or unavoidable circumstances), a completed Explanatory Statement of Absence form must be provided to the instructor in advance of foreseeable absences or within 72 hours of unforeseeable absences.

Missed laboratory sessions and exams can be made up only if the absence is excused. If more than one exam is missed, medical documentation must be provided to the instructor.

III. Grading

Letter Grades
A range 90-100%
B range 80-90%
C range 70-80%
D range 60-70%
F range < 60%

The lower limits for letter grades may be adjusted, but will never be raised. For example, the A range for final grades may be 88-100%, but will not be 95-100%. Plus or minus grades will be appended to letter grades. The grade of A+ is reserved for rare and extraordinary academic achievements.

Grading Scheme

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Grade Item</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safety training</td>
<td>25</td>
</tr>
<tr>
<td>1</td>
<td>Spreadsheet assignment</td>
<td>25</td>
</tr>
<tr>
<td>11</td>
<td>Notebook preparation, safety assessment, data recording; 5 points each experiment</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>Laboratory performance (safety, preparedness, cleanup, chemical and waste handling, etc.); 10 points each experiment</td>
<td>110</td>
</tr>
<tr>
<td>4</td>
<td>Lab reports (Exp. 1-4, 35 points each)</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>Lab reports (Exp. 5-11, 50 points each, lowest score dropped)</td>
<td>300</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>26</td>
<td>Lecture attendance (2 points each, reduced credit if tardy, maximum of 45 points)</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>Exams (100 points each)</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

**Late Assignments**  
Assignments are due at the specified date and time. If no time is indicated, assignments must be submitted on ICON by 11:59 PM on the specified due date. Late assignments will be penalized 5 points per calendar day after this deadline.

**Re-grading**  
Adjustments to grades will only be considered within one week after an assignment grade has posted. The re-grade request must be made to Prof. Stone and accompanied by a written, detailed description of the grading concern using Regrade Request Form on ICON. Re-grading will involve re-assessment of the entire assignment and may increase or decrease the grade.

**Laboratory Notebooks**  
Each student must maintain a laboratory notebook. Specific instructions for keeping notebooks will be discussed in class and are provided on ICON. Points in the class grade are allocated for the completion of the notebook entries.

**Laboratory Performance**  
Grading criteria for laboratory performance include safety, preparedness, chemical and waste handling, efficiency, cleanup, respectful conduct, etc. Assessment will be conducted through observations, pop quizzes, and oral examinations.

**Examinations**  
The exams will focus on material presented in both the lecture and laboratory portions of the course. Exams 1 and 2 will be given during the scheduled lecture period. Exam 3 will be given during the final exam period assigned to the class. Exams 1, 2, and 3 will focus on Experiments 1-4, 5-8, and 9-11, respectively. Each exam will be cumulative with respect to statistics and data analysis. A summary of exam dates is given in Appendix 1.

**Lab Reports**  
A lab report must be completed and turned in for each experiment. Required report contents are detailed at the end of each experiment information package. Reports must be prepared using the Microsoft Excel templates provided. All reports must be submitted via the ICON Dropbox. It is the student’s responsibility to ensure that your completed assignments are successfully submitted on time; this may be done with an email confirmation.

Lab reports for make-up laboratories will be due either one week from the date the lab was made-up or the date and time of the final exam, whichever is earlier.
IV. Course Conduct

Laboratory Safety

Laboratory safety is a primary concern and you will be expected to act in a safe and professional manner. Failure to meet the following safety requirements may result in your dismissal from the laboratory session. Repeated violations of these safety practices will result in dismissal from the course.

1. Come to lab prepared! Before coming to lab, attend lecture, carefully read and understand all laboratory procedures, conduct a thorough safety assessment, and prepare your laboratory notebook according to the guidelines. Arrive to lab on time to ensure you receive all TA instructions.

2. Safety goggles must be worn at all times. Additional personal protective equipment (PPE) may be required for certain experiments. Lab coats are optional.

3. Proper dress is required to protect you from chemical and physical hazards in the laboratory. Skin must be completely covered from shoulders to toes. Clothing must not have holes.
   - Feet must be completely enclosed in the shoe; socks shall not show. Wear shoes that you will be comfortable standing in for several hours.
   - Legs must be completely covered with either long pants or a long skirt. Leggings are discouraged, as they provide little to no protection against chemical spills.
   - Shoulders and torsos must be completely covered. Ensure that midriffs and backs are completely covered when standing and performing experiments.

4. Report any injury, chemical spill, broken equipment, or other incident to your TA immediately – even if you think it is minor.

5. Enter the laboratory only during your assigned laboratory period and with proper supervision. Do not enter the lab if your TA is not present.

6. Eating, drinking, and smoking are prohibited in the laboratory.

7. Proper disposal of solvents, solids, and sharps is essential for the safety of all. If you are not sure how to dispose of something, ask your TA.

8. The language of instruction is English. Use of other languages in the lab will be considered a safety violation. Students will be warned once, and then dismissed from the lab that day for repeated violations.

9. Instructions from the course instructor, laboratory staff, and TAs must be followed at all times.
Equipment Policy

All glassware and other equipment received at the beginning of the semester by a student registered for a given course and assigned a drawer/locker is the responsibility of that student. On the day of check-in, the student must be certain that all the equipment required for the course is in the drawer, the glassware has no chips or cracks and that the equipment is in good working order. The Chemistry Department will replace any glassware or equipment that is defective at the time of check-in. At the end of the semester or at the time the student leaves the course, every piece of glassware and equipment must be returned to the Department without chips or cracks and in good working order. All pieces of glassware or equipment that are missing, broken, or not in good working order will be charged to the student through the University billing system.

Technology

Each student will have access to computers in the departmental computer facility, which is located in W241 CB.

The use of cell phones and the internet during class times is prohibited. All personal devices must be silenced prior to the start of class and stowed in backpacks during laboratory.

Exam Conduct

Calculators: Programmable calculators and mobile devices are not permitted for use during exams. Students are encouraged to use a non-programmable calculator with scientific notation and logarithm capabilities. If such a calculator is not available, contact the instructor 24 hours in advance of the exam to request to borrow a permissible calculator.

Time Limit: Exams are limited to the allotted exam periods and time limits are strictly enforced. Please show up on time for exams and turn in your exam promptly at the end of the period when asked.

Personal Belongings: During exams, all personal belongings, including books, bags, notes, mobile devices, and computers, must be fully enclosed in backpacks and left at the front of the room.

Policy on Academic Honesty

All graded work must be your own.

Some laboratory experiments will be performed in groups of two. In this case, data will be collected collaboratively and the collected data will be shared among group members. Beyond the data collected, each student should prepare his/her own lab report, including all calculations, graphs, and discussion.

Students are permitted and encouraged to discuss general procedures for data analysis, use of Excel, and general questions about the procedures and specific data collected. However, this should be done in the context of completing your own work. Here are some examples:
Example 1: Student A asks student B: “Can you describe how to change the size of the symbols on my plot?” This type of collaboration is allowed and encouraged.

Example 2: Student A asks student B: “Can I get a copy of your spreadsheet so that I can check my answers?” This type of collaboration is not allowed.

Example 3: Student A asks student B: “What formula did you use to answer Question 2 on the lab report?” This type of collaboration is not allowed. This type of question should be discussed with the teaching assistant or the instructor.

In grading the assignments and lab reports, the instructors will be looking for evidence of improper collaboration. If such evidence is found, all parties involved will receive no credit for the assignment and will be reported to the College of Liberal Arts and Sciences.

Any questions regarding what constitutes honest behavior in this source should be directed to the instructor.

V. Administrative Details

Chemistry Center
Chemistry Building E225, (319) 335-1341

Department of Chemistry Office
James Gloer, Departmental Executive Officer
Chemistry Building E331, (319) 335-1350

Administrative Home
The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and other policies. These policies vary by college (https://clas.uiowa.edu/students/handbook).

Electronic Communication
Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2).

Accommodating Disabilities
UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student should then discuss accommodations with the course instructor (https://sds.studentlife.uiowa.edu/).
Non-discrimination in the classroom

UI is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University’s Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (diversity.uiowa.edu).

Academic Integrity

All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty. Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through the UI email address (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).

CLAS Final Examination Policies

The final exam schedule for each semester is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this final exam information. No exams of any kind are allowed the week before finals (https://clas.uiowa.edu/faculty/teaching-policies-resources-examination-policies).

Making a Complaint

Students with a complaint should first visit with the instructor or course supervisor and then with the departmental executive officer (DEO), also known as the Chair. Students may then bring the concern to CLAS (https://clas.uiowa.edu/students/handbook/student-rights-responsibilities).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, definitions, and the full University policy, see https://osmrc.uiowa.edu/.

*These CLAS policy and procedural statements have been summarized from the web pages of the College of Liberal Arts and Sciences and The University of Iowa Operations Manual.*
# Appendix 1: Fundamentals of Chemical Measurements Exam Schedule

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>March 6</td>
<td>1:30-2:20 PM</td>
<td>E264 CB</td>
</tr>
<tr>
<td>Exam 2</td>
<td>April 10</td>
<td>1:30-2:20 PM</td>
<td>E264 CB</td>
</tr>
<tr>
<td>Exam 3</td>
<td><strong>Final exam date, time, and location to be announced.</strong></td>
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