BASIC MEASUREMENTS
SYLLABUS for FALL 2015
CHEM:2021:OAAA (lecture)
CHEM:2021:0A01 (morning laboratory), CHEM:2021:0A02 (afternoon laboratory)

I. Logistics

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

Lecture
Location/Time: Chemistry Building W268
Tuesdays and Thursdays 8:30 – 9:20 AM

Laboratory
Location/Time: Chemistry Building E440
Tuesday and Thursday mornings: 9:30 AM - 12:20 PM
Tuesday and Thursday afternoon: 2:00-4:50 PM

Instructor Office Hours:
Wednesdays 12:00-1:30 PM (in W376 CB)
During lab periods and by appointment

Teaching Assistants (TAs)
C. J. Ronhovde (cicily-ronhovde@uiowa.edu)
Office hours: Monday 2:30-4:30 PM, E208 CB

Javier Luna (javier-luna@uiowa.edu)
Office hours: Monday and Wednesday 1:30-2:30 PM, E208 CB

Junnan Wang (junnan-wang@uiowa.edu)
Office hours: Monday 9:30-10:30 AM, Wednesday 3:30-4:30 PM, E208 CB

Jaclyn Wrona (jaclyn-wrona@uiowa.edu)
Office hours: Wednesday and Friday 10:30-11:30 AM, E208 CB

II. Course Matters

Course Objective
The goal of this course is for students to learn how to make basic 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.
Basic Course Structure

The course is divided into lecture and laboratory sections. Lectures will cover the basic principles of the experiments, statistics, and data analysis. 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 basic laboratory skills. Chemical separations and instrumental methods will be featured in later class assignments.

Textbook

Quantitative Chemical Analysis, 8th edition (2010); Daniel C. Harris, W. H. Freeman & Co. (Note: The 7th or 9th editions may also be used.)

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.

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 or exams can be made up only if the absence is excused. Failure to perform all laboratory experiments will result in a grade of incomplete for the course.

III. Grading

Letter Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
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<tr>
<td>B</td>
<td>80-90%</td>
</tr>
<tr>
<td>C</td>
<td>70-80%</td>
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<tr>
<td>D</td>
<td>60-70%</td>
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<tr>
<td>F</td>
<td>&lt; 60%</td>
</tr>
</tbody>
</table>

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.
### 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>20</td>
</tr>
<tr>
<td>1</td>
<td>Spreadsheet Assignment</td>
<td>50</td>
</tr>
<tr>
<td>11</td>
<td>Notebook Preparation and Data Recording, 5 points each experiment</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>Laboratory Performance (safety, timeliness, 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, 30 points each)</td>
<td>120</td>
</tr>
<tr>
<td>7</td>
<td>Lab Reports (Exp. 5-11, 50 points each, lowest score dropped)</td>
<td>300</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.

### Regrading
Adjustments to grades will only be considered within one week after an assignment or exam is returned. 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. Regrading 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.

### 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 normal 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 relative to the statistics and data analysis material presented in the lecture portion of the course. 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.

IV. Course Conduct

Laboratory Safety

Laboratory safety is a primary concern and you will be expected to act in a safe and professional manner.

1. Come to lab prepared!
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.
   - Feet must be completely covered. Laced shoes/sneakers or boots are required. (no sandals, no sandals with socks, no high heels, no ballet flats, no boat shoes, no shoes that do not have the toes, tops and backs of the feet covered).
   - Legs must be completely covered. Shorts, short skirts and short dresses are not acceptable.
   - Tank tops and muscle shirts are not permitted.
4. Report any injury to your TA immediately – even if you think it is minor!
5. Students are allowed in the labs only during the assigned times 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. Nothing goes down the drain!
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. Repeated violations of these safety practices will result in dismissal from the course.
10. Department of Chemistry safety rules (posted on ICON) and 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 after the close of the semester.

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 work performed in this course is expected to be your own. Some laboratory experiments will be performed in groups of two. However, once you leave the laboratory, each student should prepare his/her own lab report. 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 show me 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.

If you have questions regarding an experiment, contact the instructor or TA. 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. These principles also apply to the use of graded lab reports from previous years. You will receive no credit if it is determined that the work you turn in is not your own.

V. Administrative Details

<table>
<thead>
<tr>
<th>Chemistry Center</th>
<th>Chemistry Building E225</th>
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<tbody>
<tr>
<td></td>
<td>(319) 335-1341</td>
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<tr>
<td></td>
<td>Here, you may obtain signatures to add/drop chemistry courses.</td>
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</tbody>
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<thead>
<tr>
<th>Department of Chemistry Office</th>
<th>Daniel Quinn, Departmental Executive Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemistry Building E331</td>
</tr>
<tr>
<td></td>
<td>(319) 335-1350</td>
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</tbody>
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| Administrative Home | The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at http://clas.uiowa.edu/students/handbook. |

| Electronic Communication | University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11). |

| Accommodating Disabilities | A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See http://sds.studentlife.uiowa.edu/ for more information. |

| Academic Honesty | All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic |
misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

**CLAS Final Examination Policies**
The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar’s web site and will be shared with instructors and students. It is the student’s responsibility to know the date, time, and place of a final exam.

**Making a Suggestion or a Complaint**
Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

**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 have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

**Reacting Safely to Severe Weather**
In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.

*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: Basic Measurements Exam Schedule - Fall 2015**

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>October 8</td>
<td>8:30-9:20 AM</td>
<td>W268 CB</td>
</tr>
<tr>
<td>Exam 2</td>
<td>November 12</td>
<td>8:30-9:20 AM</td>
<td>W268 CB</td>
</tr>
<tr>
<td>Exam 3</td>
<td>Final exam date, time, and location to be announced.</td>
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