CHEMISTRY 3005
QUANTITATIVE ANALYSIS LABORATORY
FALL 2011

Course Name: Quantitative Analysis Laboratory
Time/Location: M 3:30-6:20 or Th 12:30-3:20 p.m. ML-144
Instructor: Stephen Bialkowski Office ML-359 Phone: 7-1907, email: stephen.bialkowski@usu
Teaching Assistant: Prakash Joshi Office W-006 email: p.r.joshi@aggiemail.usu.edu
Office Hours: During the laboratory meeting, by appointment or using email.

Text: USU Department of Chemistry and Biochemistry Chemistry 3005 Laboratory Manual is on-line.

Materials: Bound laboratory notebook, safety goggles; laboratory coat highly recommended, pencil, pen, etc.

Course Content: This course consists of 8 laboratories. Laboratories include experiments in volumetric, gravimetric, and instrumental methods of chemical analysis. Instrumental methods include electrochemistry, emission and absorption spectrophotometry, and ion-exchange and gas chromatographic separations.

Examinations: Course performance will be evaluated based on the accuracy of reported experimental results, laboratory notebook data entry and general quality, and in-class quizzes.

Grading: Each experiment has a maximum score of 100 points. Laboratory notebook checks will count 50 points each. The final quiz is 100 points.

<table>
<thead>
<tr>
<th>Maximum Points</th>
<th>Task</th>
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<tbody>
<tr>
<td>800</td>
<td>8 Experiments</td>
</tr>
<tr>
<td>100</td>
<td>Laboratory notebook checks</td>
</tr>
<tr>
<td>100</td>
<td>Final quiz</td>
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<tr>
<td>1000</td>
<td>Total Points</td>
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</tbody>
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The maximum letter grade ranges will be: A, 90-100%; B, 80-89%; C, 70-79%; D, 60-69%. The ranges may be lowered but will not be raised. Plus (+) and minus (-) grade modifier will be used. The upper 1/3 of a letter grade % range will be assigned (+), the lower 1/3 will receive a (-) modifier.

Withdrawal Policy: This course will follow the University policy on withdrawals stated in the current Undergraduate Catalog. Drop dates are listed in the Schedule of Classes.

Missed Examination Policy: Students may be excused from a laboratory in cases of emergency. Documentation must be supplied to be excused. In cases of excused absence, grades will be assigned based on % of adjusted total score. For other absences, late assignments will be penalized 10% of the maximum score per meeting day to a maximum of 50%. No repetition of experiments is permitted once a result is submitted.

Attendance Policy: Attendance is mandatory for successful performance in this course. Attendance is monitored through laboratory notebook checks.
**Student Disability Statement:** Any student with a disability that requires accommodations must contact the Instructor. The disability must be documented by the Disability Resource Center. Course materials may be requested in alternative formats.

**Laboratory Fee Statement:** A laboratory fee is required for this course. Laboratory fees for this course are used for the purchase of equipment and supplies for the laboratory.

**Assessment Statement:** The value of a quantitative teaching laboratory is to learn laboratory procedures manifesting in accuracy. Laboratory learning objective performance is evaluated by comparing analytical results of analyzed unknowns to those reported in previous years.

**Learning Objectives:**

- Comprehend the importance of stoichiometry, chemical equilibrium and kinetics in analysis.
- Understand laboratory and chemical safety
- Formulate concepts of validation of data and experimental design
- Comprehend concept of and perform chemical measurement calibration
- Apply and assess concepts of availability and evaluation of analytical standards and formulate standardization methodology
- Demonstrate knowledge of sampling methods for all states of matter
- Use statistical methods for evaluating and interpreting data
- Assess sources of error in chemical and instrumental analysis and account for errors in data analysis
- Recognize interferences in chemical and instrumental analysis
- Apply theory and operational principles of analytical instruments