Class Meetings: January 14 – April 29, 2011
11:00 – 12:50, Friday
Sciences Complex, SC 221
Final Exam: Friday, April 29


Course Objectives:
- Reinforce concepts discussed in class through hands-on experimentation
- Become competent recorders of experimental information
- Become competent interpreters of experimental information
- Develop the ability to work independently on an identification problem
- Become familiar with the use of a simple computer spreadsheet for graphing and simple data analysis

Grading Procedure:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prelabs (13 @ 10 points)</td>
<td>130</td>
</tr>
<tr>
<td>Lab Record and Post Lab (13 @ 40)</td>
<td>520</td>
</tr>
<tr>
<td>Final Exam</td>
<td>80</td>
</tr>
<tr>
<td>Total Points</td>
<td>730</td>
</tr>
</tbody>
</table>

The grading scale will be: A (730-657); B (656-584); C (583-511); D (510-438); and F (< 438). There are two other sections of CHEM 1471 running during the week (T and R, 2:00 – 3:50). However, we are the last lab doing the experiment each week. If you know in advance you will miss a lab, arrangements can be made for you to make it up in another lab section, but these arrangements must be made in advance. The low lab score of the one-week experiments will be dropped. There may be some changes in experiment during the semester – you will be advised ahead of time. Credit for labs is not given if you were not in attendance.

Description of Graded Components:

Prelabs – A series of prelabs is administered through Mastering Chemistry and one prelab is due at 9:00 AM on Friday every week – even in the second week of two-week experiments. You can add this course through your regular Mastering Chemistry login for the lecture part of the course. The course ID required for accessing the course is: CHEM1471BUCKLEYSP11.

Lab Reports and Post Lab – There are various combinations of Laboratory Records and Post Labs with each experiment. All paperwork following the experiment will be completed and turned in at the start of the next lab period. Any work turned in after the start of the lab period will be assessed a 25% late penalty. Work will not be given credit if turned more than one week late.

Final Exam – A final exam will be administered in the last week of lab, April 29. More information will be given regarding the final. It may be a practical, written, or a combination of the two.

Other Important University Information
If for any reason you feel the need to drop the course, PLEASE go through the paper work by completing an add/drop slip from the registrar. Failure to do so will result in an unwanted grade on your transcript. Last day to withdraw with an automatic "W" is April 8. After that date, withdrawal requires my signature and assignment of a "W" or "F" based upon your class standing to that point. Last possible day to drop a course is April 22. Further important University information may be found at by going to www.cameron.edu, going to Administration, clicking on Academic Affairs, and clicking on Spring 2011 16 Weeks under syllabus attachments.
**Instructor Information:**
Dr. Gary Buckley  
Office: Room 225F  
Sciences Complex  
Phone: 580-581-2885  
e-mail: gbuckley@cameron.edu

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
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<tbody>
<tr>
<td>8:00</td>
<td>CHEM 1004</td>
<td>CHEM 1004</td>
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<tr>
<td>9:00</td>
<td>Office</td>
<td>Office</td>
<td>Class Prep</td>
<td>Physics Prep</td>
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<tr>
<td>10:00</td>
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<td>Class Prep</td>
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<td>VOH – CHEM 1474</td>
</tr>
<tr>
<td>11:00</td>
<td>VOH – CHEM 1474</td>
<td>VOH – CHEM 1004</td>
<td>Office</td>
<td>VOH – CHEM 1004</td>
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<tr>
<td>12:30</td>
<td>CHEM 1474</td>
<td>CHEM 1474</td>
<td>CHEM 1474</td>
<td>CHEM 1474</td>
<td>CHEM 1471</td>
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<td>1:00</td>
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<td>1:30</td>
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<tr>
<td>2:00</td>
<td>Meetings, Research</td>
<td>Recreation</td>
<td>CHEM 1361</td>
<td>PHYS 1215L</td>
<td>Meetings, Research</td>
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<tr>
<td>3:00</td>
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<tr>
<td>4:00</td>
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<td>VOH – CHEM 1004</td>
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</table>

Please feel free to ask any questions you wish. Office hours are not exclusive times I will visit with you. I am on campus quite a bit – feel free to come to my office if you have questions at any time. I may need to alter the office hours a little but will let you know if that is going to happen.

*It is the policy of Cameron University to accommodate students with disabilities, pursuant to federal and state law. Students with disabilities who need classroom accommodations must make their requests by contacting the Office of Student Development at (580) 581-2209, North Shepler Room 314.*
<table>
<thead>
<tr>
<th>Date</th>
<th>Exp. #</th>
<th>Title</th>
<th>Skill Set with Textbook Reference (Brown, LeMay, Bursten, 11&quot; Edition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/14</td>
<td>1</td>
<td>Laboratory Safety, Check-in</td>
<td>Recall of lab safety issues from General Chemistry I Labs</td>
</tr>
</tbody>
</table>
| 1/21 | 2      | Separation of Ions by Paper Chromatography                           | Separate mixtures based on affinity for solvents and adsorption to solid substrate  
  - Properties of Matter (1.3)  
  - Solution Stoichiometry and Chemical Analysis (4.6) |
| 1/28 | 3      | Determination of the Mass Percentage of Sodium Hypochlorite in a Sample of Household Bleach | Work with the definition of molarity, work titration problems  
  - Concentrations of Solutions (4.5)  
  - Solution Stoichiometry and Chemical Analysis (4.6) |
| 2/4  | 4      | Melting Point Depression: Determining the Molar Mass of an Unknown Substance | Use expression for lowering of freezing point to find missing information  
  - Colligative Properties (13.5) |
| 2/11 | 5      | Reactions of Acids with Common Substances                            | Complete single displacement and metathesis reactions, write net ionic equations  
  - Precipitation Reactions (4.2)  
  - Acid and Base Reactions (4.3)  
  - Oxidation-Reduction Reactions (4.4) |
| 2/18 | 6      | Rates of Chemical Reactions: A Clock Reaction                       | Dilution calculations, Method of initial rates  
  - The Rate Law: The Effect of Concentration on Rate (14.3)  
  - The Change of Concentration with Time (14.4) |
| 2/25 | 7      | The Kinetics of Phenolphthalein Decolorization                      | Make appropriate concentration-time plots to explore kinetic data, extract kinetic data from plots, gain familiarity with Beer’s Law  
  - The Rate Law: The effect of Concentration on Rate (14.3)  
  - The Change of Concentration with Time (14.4) |
| 3/4  | 8      | The Determination of an Equilibrium Constant                        | Use equilibrium concentrations to determine the value of an equilibrium constant  
  - The Equilibrium Constant (15.2)  
  - Interpreting and Working with the Equilibrium Constant (15.3) |
| 3/11 | 10/11  | Determining the pKₐ of an Unknown Acid                              | Calculate pH at various points of an acid-base titration  
  - Acid-Base Titrations (17.3) |
| 3/18 |        | Spring Break – No Classes                                            |                                                                   |
| 3/25 | 10/11  | Determining the pKₐ of an Unknown Acid                              | Calculate pH at various points of an acid-base titration  
  - Acid-Base Titrations (17.3)  
  - Use information from titration to evaluate mass of unknown acid  
  - Acid-Base Titrations (17.3) |
| 4/1  | 12     | Group I: Separation and Identification of Pb²⁺, Hg₂⁺⁺, and Ag⁺ Cations | Complete and balance net ionic chemical equations  
  - Precipitation and Separation of Ions (17.6) |
| 4/8  | 14/15  | Group III/IV: Separation and Identification of Fe²⁺/Fe³⁺, Ni²⁺, Cr³⁺, Ba²⁺, and Ca²⁺ Cations (Week 1) | Complete and balance net ionic chemical equations  
  - Precipitation and Separation of Ions (17.6) |
| 4/15 | 14/15  | Group III/IV: Separation and Identification of Fe²⁺/Fe³⁺, Ni²⁺, Cr³⁺, Ba²⁺, and Ca²⁺ Cations (Week 1) | Complete and balance net ionic chemical equations  
  - Precipitation and Separation of Ions (17.6) |
| 4/22 | 18     | Voltaic Cells and Applications of the Nernst Equation               | Use the Nernst equation, determine equilibrium constant from measured concentrations  
  - Interpreting and Working with Equilibrium Constants (15.3)  
  - Voltaic Cells (20.3)  
  - Cell EMF under Standard Conditions (20.4)  
  - Cell EMF under Nonstandard Conditions (20.5) |
| 4/29 |        | Final Exam – 11:00 – 12:50                                           |                                                                   |