Course overview and objectives. The lab is meant to reinforce chemical concepts and theories learned in lecture as well as to give hands on experience so that you learn some of the basics of working in a chemical laboratory. At the end of the semester a successful student will be able to:

- name common glassware and equipment found in the classroom
- use a spreadsheet program such as Excel to perform calculations and to create meaningful graphs
- recognize safety hazards
- evaluate the precision and accuracy of data
- apply the rules for reporting data with the appropriate significant figures
- write a report of results and conclusions
- support conclusions based upon experimental observations
- explain how spectrometers work and to use the information they give to obtain meaningful results
- manipulate data in order to calculate concentrations and equilibrium constants
- construct titration curves from experiment and theory
- create flow charts to aid in classifying and identifying coordination compounds
- organize metals in order of reduction potentials
- modify experimental parameters to calculate rate constants and to deduce the orders of a reaction
- calculate thermodynamic values from experimental data

Required Material:
- Fall 2014 Lab Manual: Chemistry 1B Lab Manual
- Chemical Resistant Safety Goggles
- Closed Toed Shoes
- Lab Coat (Lab jackets are NOT acceptable)
- Non-graphing Calculator
- Blue or black pen and pencil
- USB Flash Memory Drive
- Headphones
- Supplies for Service Project (this will depend upon your chosen topic)
- At least 1 Examination Blue Book (11 x 8 ½; 8 sheets)

Blackboard:
You will need to regularly check for updates on Blackboard. Review the syllabus and safety material on Blackboard. Once you have reviewed this information, more information will be made available to you, such as files needed for lab experiments. You will also find links to YouTube videos that contain the prelab lectures. You will have to watch the videos before you
come to lab. Once you watch the video, you will have access to excel templates that you will need for the lab experiment. If you have not watched the prelab lecture videos, you will be asked to leave lab until you do. This will cost you 25 pts on your instructor evaluation grade.

Emailing Your Instructor:
In the subject line include your class name in all capitals followed by a colon and a brief description of the email. For example: CHEM 1B: Quiz 2 grade check. If it is a lengthy question or response, it is suggested that you visit your lab instructor.

Grading*:
The General Catalog defines the course grades as follows:

“A - Excellent. Performance of the student has demonstrated the highest level of competence, showing sustained superiority in meeting all stated course objectives and responsibilities and exhibiting a very high degree of intellectual initiative.

B - Very Good. Performance of the student has demonstrated a high level of competence, showing sustained superiority in meeting all stated course objectives and responsibilities and exhibiting a high degree of intellectual initiative.

C - Satisfactory. Performance of the student has demonstrated a satisfactory level of competence, showing an adequate level of understanding of course objectives, responsibilities, and comprehension of course intent.

D - Unsatisfactory. Performance of the student has been unsatisfactory, showing inadequacy in meeting basic course objectives, responsibilities, and comprehension of course content.

F - Failure. Fails to meet course objectives. Work at this level does not meet requirements for credit toward a degree.”

Grade scale (in %):

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

Lab Grade is based on

- Quizzes: 45%
- Experiments and Study Guides: 26%
- Lab Practical: 8%
- Expt 3B Formal Report: 8%
- Service Project: 8%
- Instructor Evaluation: 5%

Instructor Evaluation: The instructor evaluation is a subjective grade that may include such things as punctuality, neatness, safety, participation in discussion, efficiency, group cooperativeness, and independence. 4% will reflect your overall performance. The other 1% will be based on your evaluation as lab helper for the day. It is possible to have a negative score.

*ALL LAB GRADES ARE SUBJECT TO NORMALIZATION! Lab instructors turn in your raw lab scores and lab letter grades to the lab coordinator and to your instructor. Generally the
lab letter grade, not the raw score, is converted to a score that fits your instructor's grading profile. Any lab section's letter grades may be changed by the coordinator and/or lecture instructor in a way to provide a normalized grade distribution for that section, to achieve parity with the other lab sections, if that is possible. In other words, if your lab instructor is a tough grader compared to the other lab instructors, lab letter grades in your class may be raised. On the other hand, if your lab instructor is an easy grader, lab letter grades in your class may be lowered.

**Original Work and Base Credit**

You must purchase a new lab manual and fill it in with your own work. Copying work from previous semesters is considered cheating and will not be tolerated, and if discovered will result in an “F” grade for the course!

All reports, Pre-Labs, and Study Guides are subject to grading by your instructor, at his or her discretion. Please work with your instructor and your fellow students to ensure that you understand the conceptual basis of the lab, and that all report calculations, questions and problems are correctly answered. The quizzes that you will take (and upon which so much of your lab grade depends) will be based precisely on these items, and you will want the correct methods and answers available when you study.

- **Base credit is given when you have filled in all required sections of an experiment or Study Guide to the satisfaction of your instructor.** Examples of why you may not get base credit include not doing graphs, not completing a section of a lab experiment, not turning in a lab report, leaving a fair amount of questions unanswered.

- **If base credit is not granted, then you will be counted absent for the experiment (or study guide) whether or not you were physically present.**

- If you leave lab before collecting all of the necessary data, your grade will be 0 for this experiment, and it will count as an absence.

- The third absence will result in an F in the lab and the course.

**Note:** We want you to take advantage of the expertise of your lab instructor and the collaborative goodwill of your peers to maximize the learning that you can achieve in lab. *This means we expect you to be working in lab for close to, if not all, of approximately three hours per lab.*

**Class Attendance and Absentee Policy:**

Attendance is taken at the time Base Credit is granted. There will be a sign in/out sheet by the door to document attendance. Students are responsible for all material covered and all announcements made in class whether or not they are present. LABORATORY ATTENDANCE IS MANDATORY. If you miss an experiment and you have an excused absence (serious or contagious illness, death, CSUF sponsored trip) with the appropriate documentation it may be possible to make up the lab. An unavoidably missed lab may be made up only during the same week the experiment is scheduled and only during another scheduled Chem 1B laboratory in which there is room to work. You must obtain the permission of the laboratory instructor in the make-up lab to work there, and this instructor should sign and date the lab book to verify your attendance in the lab, which you then show to your assigned instructor. *This make-up option is not to be used more than twice without the specific permission*
of the lab coordinator. **If you miss 3 labs for any reason, you fail the lab and the lecture for CHEM 1B. Made-up labs still count as an absence.**

**Assignments**

Please note that blue or black ink pens and pencil are the only acceptable writing utensils for turning in assignments. Also, if the instructor can’t read it, the instructor will not grade it. So please write answers legibly. **YOU MUST SHOW YOUR WORK.** You must show your set up for all calculations and problems. You will get no credit for magic answers whether right or wrong (magic answers = answers that appear out of nowhere). Only simple function calculators with small rectangular windows are allowed on the exams. Cell phone calculators are not acceptable.

**Safety**

Careless safety procedures, including but not limited to not wearing appropriate clothing and safety glasses, may adversely affect your grade. For violating safety rules previously explained by your lab instructor or another supervisor, your grade may be lowered by ONE OR MORE LETTER GRADES for unsafe practices in the laboratory, and for gross violations, such as doing unauthorized experiments, you can be failed for the entire 1B course.

**YOU MUST WEAR SAFETY GLASSES AND A LABCOAT AT ALL TIMES IN THE LABORATORY AND IN THE STOCKROOM.**

- Bare skin should be minimized (no sandals or shorts or short skirts or dresses or exposed midriffs). If you look down at your feet, you should see no skin (including the tops of your feet).
- Leather shoes are highly recommended.
- No high heels or platform shoes.
- Wear a lab coat and clothes that you do not mind ruining. A lab coat extends past your knees. A lab jacket is not acceptable.
- Long hair must be put up or tied back.
- Fingernails cannot be so long as to interfere with safe use of glassware and chemicals.
- Long pants are highly recommended and may be required by your lab instructor.

**Individual and Group Experiment**

All experiments are to be done as pairs except for the practical, experiment 3B, and the qual scheme which must be done individually. In the case of experiments that require group work and the lack of a whole number divisor to make all the groups the same size, the members of the larger group must change with each experiment.

When you work with a partner, **you must list the name of your partner at the top of your lab report.** If you get the same numbers and values as someone else without them being listed as your lab partner, this is considered cheating. Submitting data that you did not collect this semester or submitting falsified data is considered cheating.

**Pre-labs**

You must have your pre-lab completed before you come to lab; they will be collected at the beginning of each lab. **If you come to lab without the pre-lab done, you will be asked to leave while you complete the prelab, you will lose 25 pts of your lab instructor evaluation grade.** A completed pre-lab is a requirement before you do the lab experiment.
Late work
Late assignments will result in your instructor evaluation grade being penalized by 25pts for each incidence. Once an answer key has been given out or the assignment has been graded, late work will not be accepted.

Cheating
Students are advised to read the University Policy on Cheating and Plagiarism, in the Schedule of Courses. In this course, in cases where cheating is suspected on quizzes or tests, the instructor reserves the right to require re-examination under controlled conditions (time, place and seating), or to take more severe measures if warranted. Cheating is suspected under circumstances that include (but are not limited to) the following:

- A student’s eyes are observed looking toward another student’s quiz or exam paper.
- A student’s grade on an exam is sharply different from the rest of the student’s performance on other quizzes and tests.
- Crib notes are suspected.
- A student is suspected of having someone else take the exam for him or her.
- Talking during the lab practical. Remember this is an exam.
- A student is suspected of having used someone else’s data in preparing lab work, or in using data not generated during this semester.

Incidents of cheating are usually reported to the Dean of Student Affairs and may become part of your permanent University record. The minimum consequence of cheating is a zero on the assignment and possibly failure of the course; administrative actions involve probation, suspension, and expulsion from the University.

THIS SYLLABUS AND SCHEDULE ARE SUBJECT TO CHANGE IN THE EVENT OF EXTENUATING CIRCUMSTANCES. IF YOU ARE ABSENT FROM CLASS, IT IS YOUR RESPONSIBILITY TO CHECK ON ANNOUNCEMENTS MADE WHILE YOU WERE ABSENT.

University Policies
The course will adhere to the university policy on students with disabilities and policy on cheating and plagiarism.

Students with Disabilities: Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in the Henry Madden Library, Room 1202 (278-2811).

Cheating and Plagiarism: "Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work."
Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

**Disruptive Classroom Behavior:** "The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. ... Differences of viewpoint or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop and understanding of the community in which they live. ... Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class."

Arriving to class late is considered disruptive behavior. Enter through the back of the room as quietly as possible. If you know that you are going to be regularly late due to unavoidable circumstances, please let the instructor know. Otherwise, those persons who make a habit of showing up late will not be admitted into the classroom.

**Computers:** "At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (http://www.csufresno.edu/ITS/) or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University's information resources."

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### Chemistry 1B Laboratory Schedule Fall 2014

<table>
<thead>
<tr>
<th>Week of</th>
<th>Assignment</th>
<th>What's Due</th>
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</thead>
<tbody>
<tr>
<td>1 18-Aug</td>
<td>Classes haven't started</td>
<td></td>
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<tr>
<td></td>
<td>M/T Wed. No lab; Thurs: Study Guide A (SG A)</td>
<td></td>
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<tr>
<td>2 25-Aug</td>
<td>Study Guide A (SG A) &amp; Study Guide B (S.G. B)</td>
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<tr>
<td></td>
<td>W/Th Safety, Locker Check-In, &amp; Study Guides A&amp;B</td>
<td>SG A</td>
</tr>
<tr>
<td>3 1-Sep</td>
<td>Mon. Labor Day - No Lab; Tues. S.G. B &amp; R/SL Projects</td>
<td></td>
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<tr>
<td></td>
<td>W/Th Expt. 1: Iron Analysis</td>
<td>Expt. 1</td>
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<tr>
<td>4 8-Sep</td>
<td>Expt. 2: Freezing Point Depression</td>
<td>Expt. 2</td>
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<tr>
<td></td>
<td>M/T Expt. 4: Intro to Equilibria</td>
<td>Expt. 4</td>
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<tr>
<td></td>
<td>W/Th Expt. 3B: Molar Mass of Unknown Acid (Formal Lab Report)</td>
<td>Expt. 3B</td>
</tr>
<tr>
<td>5 15-Sep</td>
<td>Quiz #1 (Syllabus, Safety, SG A&amp;B, Expts 1&amp;2); Bring draft to get instructor feedback on 3B &amp; R/SL Projects</td>
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<tr>
<td></td>
<td>W/Th Expt. 5: Equilibrium of an Indicator</td>
<td>Expt. 5</td>
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<tr>
<td>6 22-Sep</td>
<td>Expt. 7: Determination of Ka and Kb.</td>
<td>Expt. 7</td>
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<td>M/T Expt. 8: Titration Curves</td>
<td>Expt. 8</td>
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<tr>
<td></td>
<td>W/Th Expt. 8: Titration Curves</td>
<td>Expt. 8</td>
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<tr>
<td>7 29-Sep</td>
<td>Expt. 9: Intro to Qual Scheme &amp; Appendix E</td>
<td>Expt. 9</td>
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<tr>
<td></td>
<td>M/T Expt. 10: Qual Scheme Group I ions</td>
<td>Expt. 10 &amp; Appendix E</td>
</tr>
<tr>
<td>8 6-Oct</td>
<td>Expt. 11: Qual Scheme Group III ions</td>
<td>Expt. 11</td>
</tr>
<tr>
<td></td>
<td>W/Th Expt. 11: Qual Scheme Group III ions</td>
<td>Expt. 11</td>
</tr>
<tr>
<td>9 13-Oct</td>
<td>Expt. 12: Qual Scheme Group IV ions</td>
<td>Expt. 12</td>
</tr>
<tr>
<td></td>
<td>M/T Quiz #3 (Expts. 7 &amp; 8 and Appendix E); Expt. 12: Qual Scheme Group IV ions</td>
<td>Expt. 12</td>
</tr>
<tr>
<td></td>
<td>M/T Expt. 13: Practical - Day 2 - Qual Scheme</td>
<td>Expt. 13</td>
</tr>
<tr>
<td>11 27-Oct</td>
<td>Monday Expt. 16: Thermodynamics; Tues Veteran's Day - No Lab</td>
<td>Expt. 16</td>
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<tr>
<td></td>
<td>W/Th Expt. 16: Thermodynamics</td>
<td>Expt. 16</td>
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<tr>
<td>12 3-Nov</td>
<td>Expt. 15: Kinetics</td>
<td>Expt. 15</td>
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<td>M/T Quiz #4 (Expts. 9, 10, 11, 12) &amp; work on R/SL Project</td>
<td>Expt. 15</td>
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<tr>
<td>13 10-Nov</td>
<td>Expt. 14: Electrochemistry</td>
<td>Expt. 14</td>
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<tr>
<td></td>
<td>M/T No Lab, Thanksgiving Break</td>
<td>Expt. 14; R/SL documents</td>
</tr>
<tr>
<td>14 17-Nov</td>
<td>Expt. 14: Electrochemistry &amp; work on R/SL Project</td>
<td>Expt. 14; R/SL documents</td>
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<tr>
<td></td>
<td>W/Th Research/Service Learning Project Presentations</td>
<td>Expt. 14; R/SL documents</td>
</tr>
<tr>
<td>15 24-Nov</td>
<td>Quiz #5 (Expts. 16, 15, &amp; 14) and Locker Check-out</td>
<td>Expt. 14; R/SL documents</td>
</tr>
<tr>
<td>16 1-Dec</td>
<td>W/Th No lab</td>
<td>Expt. 14; R/SL documents</td>
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</table>

*Pre-Labs are always due at the beginning of class the day that lab experiment is scheduled to begin.

Revised 8/19/2014