

<b>Course:</b>	<b>CHE 132L-01 General Chemistry II Lab Spring 2012</b>
<b>Term:</b>	<b>TH 2:00-4:50 pm King Science Bldg. 103</b>
<b>Instructor:</b>	<b>Dr. F. Jordan 104 King Science Building fjordan@wilberforce.edu 937-708-5633 Office Hours MWF 11-11:50, 1 – 1:50 (drop-ins and appointments welcome)</b>
<b>Catalog Description:</b>	<b>Course Description:</b> Proper training in a laboratory is essential for any scientist, and this course will give students experience with running chemical experiments, utilizing scientific equipment and glassware, and writing lab reports. Students will reinforce the following skills from CHE 131L: scientific methodology; chemical lab procedures (safety and hygiene, standard equipment use, heating and cooling techniques, measurements, observations, data analysis including calculations and graphing, drawing conclusions, and writing lab reports); how to work with solids, liquids, and solutions; how to properly handle potentially dangerous materials, including proper disposal; reagent classification; precipitation; titration; introductory volumetric analysis; unknown identification; “coffee-cup” (constant-pressure) calorimetry; and solution preparation. Students will learn the new skills of using colligative properties to identify an unknown solute; determining rates of chemical reactions; measuring chemical equilibrium constants; more complex acid-base and redox titrations; limited qualitative analysis.
<b>Prerequisites</b>	<b><u>Pre-/Co-requisites:</u></b>  1) CHE 131 (General Chemistry I) with a grade of C or better.  2) CHE 131L (General Chemistry I Lab) with a grade of C or better.  3) MAT 113 with a grade of C or better OR concurrent enrollment in MAT 113; MAT 115 recommended but not required. As with CHE 132, it is <b><u>critical</u></b> that you are able to <b><u>use and apply algebra</u></b> to be successful in the course; the level of algebra used is higher than that of CHE 131 (applied quadratic equation and logarithms).  4) Concurrent enrollment in CHE 132 (General Chemistry II).

<p><b>Course Level Learning Outcomes:</b></p>	<p><b><u>Student Learning Outcomes:</u></b> A student who successfully passes this course will know and be able to perform the following: (Please note that this list does not state all topics that will be covered in this course, but emphasizes those topics of greatest importance in this course that will be covered.)</p> <ul style="list-style-type: none"> <li>• What safety and hygiene protocols are required to function in the laboratory</li> <li>• Where the safety devices are located in the laboratory</li> <li>• Write a scientific report on experimental results</li> <li>• Collect and evaluate a set of data and draw appropriate conclusions from them</li> <li>• Discuss experimental results verbally and in writing in a scientific fashion</li> <li>• Graph data, extrapolate a linear plot, and obtain scientific constants therefrom</li> <li>• Use basic general chemistry lab equipment and glassware</li> <li>• Measure the mass of a solid using a digital electronic balance</li> <li>• Accurately measure the volume of a liquid/solution using a graduated cylinder</li> <li>• Obtain, measure, and transfer chemicals with minimal loss</li> <li>• Handle potentially dangerous materials safely, including proper disposal</li> <li>• Prepare solutions of known concentration (mass% and molarity)</li> <li>• Perform basic general chemistry lab techniques as listed below</li> </ul> <p><b><u>Lab Skills:</u></b> Scientific measurements (balances and standard glassware), scientific observations, scientific lab methodology, reagent classification, heating and cooling techniques, solution preparation, standardization of acid and base solutions, titration (acid-base and redox, using indicators and pH meters), volumetric analysis, unknown identification, “coffee-cup” calorimetry, kinetics and rate measurements, equilibrium constant measurements.</p>
<p><b>Materials:</b></p>	<p><b><u>Required Materials:</u></b></p> <ol style="list-style-type: none"> <li>1) Lab Text: <i>Microscale Experiments for General Chemistry</i>, 1st Ed., Williamson and Little</li> <li>2) Lab Notebook: <u>Bound composition-style</u> notebook (graph paper preferred)</li> <li>3) Scientific Calculator: With parentheses, scientific notation, and logarithms. Programmable calculators are not permitted, and your cell phone can not substitute as a calculator.</li> </ol> <p><b><u>Recommended Materials:</u></b></p> <ol style="list-style-type: none"> <li>4) Periodic Table (Preferably the laminated type shown in class.)</li> <li>5) Clear plastic ruler: Clear and colorless (preferred), metric (or metric and English).</li> <li>6) 2” 3-ring binder: For holding the large number of class handouts.</li> </ol> <p>Note: These are the same required and recommended materials for CHE 131L (General Chemistry I Lab). While there is nothing new to buy, you may prefer a new lab notebook (you may use your old lab notebook,</p>

	<i>provided it is the proper kind.)</i>												
<b>Grading:</b>	<p><b>Grading Scale:</b> Approximate cutoffs are given below. <i>The exact grade cutoffs will not be publicized.</i></p> <p>A = 100% to 87%  B = 86% to 76%  C = 75% to 66%  D = 65% to 60%  F = less than 60%</p> <p>Each technique or report grade is worth about 4% of your grade (a week of lab work, technique + report, is about 8%), and the final is about 17%. 6 points equals 1%, so 5 bonus points is roughly a 0.83% grade boost, and one letter grade up is about 60 points.</p> <p><b>Grade Penalties:</b> There are non-trivial grade penalties in this course, as listed below:</p> <table> <tr> <td>Every lab not performed:</td> <td>-4% from your overall course grade</td> </tr> <tr> <td>Every lab report not submitted:</td> <td>-4% from your overall course grade</td> </tr> <tr> <td>For every pre-lab not completed before lab:</td> <td>-1% from your overall course grade</td> </tr> <tr> <td>For every lab report that is late:</td> <td>-1% from your overall course grade</td> </tr> <tr> <td>For every lab report that is unsatisfactory:</td> <td>-1% from your overall course grade</td> </tr> <tr> <td>Coming to lab late: possible failure</td> <td>Loss of citizenship points; of that lab (-8% from overall course grade)</td> </tr> </table> <p><i>Please note that it is possible for an otherwise exemplary student to fail if they do not come to lab prepared and on time, or turn assignments in late. For example, four incomplete prelabs, four late lab reports, and two unsatisfactory reports would result in a -10% penalty: the loss of a whole letter grade. Note that it is much better to turn in a lab late and/or unsatisfactory than not at all—not only will you get valuable feedback on your writing, the penalties are also smaller.</i></p>	Every lab not performed:	-4% from your overall course grade	Every lab report not submitted:	-4% from your overall course grade	For every pre-lab not completed before lab:	-1% from your overall course grade	For every lab report that is late:	-1% from your overall course grade	For every lab report that is unsatisfactory:	-1% from your overall course grade	Coming to lab late: possible failure	Loss of citizenship points; of that lab (-8% from overall course grade)
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	<p>A student's proficiency in course work is measured in terms of the following Alphabetical symbols. Minuses and pluses are not accepted.</p> <p>A: Excellent</p>
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	<p>B: Good</p> <p>C: Satisfactory (Grade C or better required in major courses).</p> <p>D: Poor (passing, except in major courses).</p> <p>F: Earned Failure. (Removed only by repeating the course). Upon successfully passing the course, the first grade is “excluded” from grade point average. The second grade is “included in the recalculation of the grade point average.</p> <p>I: Incomplete (student performing satisfactorily, but unable to complete coursework due to valid reason).</p> <p>N: Used in cases where grades are not yet submitted.</p> <p>W: Withdrew before course drop deadline.</p> <p>WP: Student withdraws from University. Withdrew passing after course drop deadline (2 weeks after mid-term).</p> <p>WF: Student withdraws from University. Withdrew failing after course drop deadline (2 weeks after mid-term. WF is treated as an F (punitive grade).</p> <p>CR: Credit/pass</p> <p>NC: No credit/fail</p> <p>Z: Failed course for non-attendance/unofficial withdrawal (treated the same as an F grade). Last date of attendance is reported by faculty.</p>
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<b>Activities:</b>	<p><b><u>Course Assignments:</u></b></p> <p>Your grade in this class will be determined primarily by your lab technique, lab reports, and the final lab practical examination. However, class citizenship (lab safety, lab cleanliness, hard work, respectful discourse, courtesy, class participation, attendance, and timeliness) and possible bonus points can modify your grade, as discussed below. Depending on the personality and needs of this semester’s class, other assignments may arise.</p> <p>Highest 10 of 11 lab technique scores (25 points each) = 250 points (10 technique + 1 citizenship)</p> <p>Highest 10 of 11 lab report scores (25 points each) = 250 points (10 technique + 1 citizenship)</p>
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Final Exam	=	100
points		
Bonus points	=	0
<u>          points (adds to total)</u>		
Total	=	600
points		

You will work in small groups (2–3) in lab, but will be individually evaluated on your in-lab technique. This evaluation is based on 1) your ability to perform basic chemical lab techniques properly; 2) your performance to the best of your ability; 3) your ability to work in and with a group; and 4) your ability to communicate scientific information quickly and effectively to me and your lab partner(s). Grading standards begin low, and gradually increase over the course of the semester. Students who know and understand chemical techniques and perform them to the best of their abilities will receive the highest marks.

Ten written lab reports are required, and are due the Wednesday after lab (the next day) in CHE 132 Lecture at the beginning of class (12:00 PM). Turn in your entire notebook. Labs turned in after this time will be significantly penalized, or refused outright and zero points assigned. Your labs will be graded and returned promptly; they will usually be available Friday morning, in my office. Rapid turnaround is essential to your development as a scientific writer. Poor quality lab reports will require rewriting, and are due when you turn in your next report; late report rewrites will be refused and assigned a grade of F. You must turn in your own original, hand-written report; if your handwriting is truly atrocious, you will be required to type your reports. Please make sure that your reports reflect your individual thoughts on the experiments; while the data and results will likely be the same for your group, the theory, observation, and discussion sections must be your own.

Coming to lab prepared and on time is essential not only to maximize your learning, but also to the safety of everyone in the lab. Thus, coming to lab unprepared and/or late is unacceptable and will result in significant penalties. In the event that your tardiness and/or unpreparedness would prevent you or others from completing the lab in a timely fashion, or would threaten the safety of anyone in the lab, you will be refused entry to the lab and will fail that lab (zero points for technique and report).

The final exam will consist of a lab practical wherein you will perform various calculations and demonstrate experimental techniques. While more information will be given later in the course, you should firmly understand one of the main rules of the lab practical: *During the final exam, you will not be allowed to use your lab textbook, and you will not be allowed to write extra notes in your lab notebook, beyond what was written there during the course of your experimental*

	<p><i>investigations during the semester.</i> Thus understanding the techniques and keeping a proper lab notebook are critical to your passing the final (and more importantly, to your development as an experimental scientist).</p> <p><i>There are no make-up labs or exams.</i> If you miss a lab, that will be the one dropped. In the event of an unavoidable circumstance, bonus assignments may be performed, at the instructor's discretion.</p> <p>Your attendance/citizenship score will be transformed into one lab technique score and one lab report score. The lowest technique and the lowest report grade will be dropped. The final exam cannot be dropped.</p> <p>Most bonus points can be earned by solving extra or difficult problems as given in the lab reports. More information will be provided in lab, usually on the lab handouts themselves. A student may not earn more than 50 bonus points.</p> <p>To summarize, you will receive the equivalent of 11 technique grades (10 lab + 1 citizenship) and 11 report grades (10 lab + 1 citizenship), the lowest of each of these sets will be dropped (drop 1 technique, 1 report), and then the final exam score and bonus points will be added. Exceptional class citizens may receive bonus consideration and adjustments to a higher grade. Likewise, poor class citizens may be adjusted to a lower grade.</p>
<p><b>Policy Statements:</b></p>	<p><b><u>ADA Policy:</u></b> In accordance with the Americans with Disabilities Act (ADA), please inform the instructor of any special learning needs you may have at the beginning of the semester so that reasonable accommodations may be provided. Please present documentation of the same to the instructor.</p>
<p><b>University Policies:</b></p>	<p><b><u>Academic Honesty:</u></b>  Plagiarism and cheating are completely unacceptable in an institution of higher education and learning. Such behavior deprives the student involved of the desired education and development of an appropriate value system. It is extremely unfair to other students, and it severely diminishes the value and integrity of a University degree.</p> <p>Plagiarism occurs whenever another's work is submitted as one's own. This includes the use of information from an Internet site or from a published author's ideas and words without proper attribution or documentation. It also includes the copying of term papers, other unpublished works, homework, case reports, computer programs and spreadsheets, and any other course assignments which are submitted for course credit as the student's own effort.</p> <p>Each instructor shall state the specific penalties for plagiarism and cheating in the course syllabus. The instructor has final responsibility</p>

	<p>for assessing the penalty in such cases regarding the course grade.</p> <p>All cases of plagiarism and cheating will be referred to the Vice President for Academic Affairs for possible further action. Additional penalties may be imposed for the egregious cases of plagiarism and cheating.</p>
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### Drops and Withdrawals

#### Dropping Courses:

A course may be dropped up through the end of the second week of the semester without any record on the transcript. After this date, a course may be dropped up to two weeks after mid-term grade reports are due, with a W appearing on the transcript. Withdrawals after mid-terms must be approved by the Vice-president of academic Affairs.

In certain General Studies core courses, students' assignments to course sections may be changed by faculty with written notification given to the Registrar. In all other cases, a student wishing to move from one section of a course to another must accomplish this by using a drop-add form to drop the old section and add the new section.

#### Withdrawal/Grading Policies

The following procedures will apply to all students withdrawing from the University. Grades will be given in regard to the time of withdrawal. Contact the Registrar's Office for forms and assistance.

- **W** (official withdrawal initiated by the student): To be given when a student withdraws between the first day of class/registration and the last day to drop courses, this is two weeks after mid-term exams.
- **AW** (unofficial withdrawal not initiated by the student): The student does not inform anyone that he/she is leaving campus (the student walks out). The university may also administratively withdraw a student for disciplinary reasons, academic legal anytime during the semester.

#### Special Accommodations:

A student who is ill or who has or develops medical conditions including but not limited to illness, physical or other disability or pregnancy must notify the Director of Health Services immediately.

<p><u>Classroom Conduct:</u></p> <p><u>Contact Hours:</u></p>	<p>See Course Policies, below.</p> <p>All classes meet for the full-time stated on schedule. Classes cannot be shortened or cancelled without prior permission. Cancelled classes must be rescheduled.</p>
<p><b>Course Policies :</b></p>	<p><b><u>Attendance Policy:</u></b> Lab attendance is mandatory, and role will be taken daily. Being late or absent will result in a loss of citizenship points and possible failure of that week's lab, <i>regardless of the reason</i>—you are present in lab and on time, or you are not. <i>Reasons for lateness/absence only matter in determining grade lowering or removal from class:</i> More than ONE missed lab may result in grade lowering, and more than TWO may result in failure and withdrawal from the course.</p> <p><b><u>Electronic Device Policy:</u></b> Electronic devices used for in-lab problem solving (calculators, etc.) may be used during lab. All other electronic devices (cell phones, etc.) must be turned off and stowed during lab. Texting, etc. during lab is not allowed, and will first result in loss of citizenship points, then ejection from the week's lab (and failure of the lab), and ultimately removal from the course. If you have a personal emergency and need a device for communication, please exit the laboratory and do what is needed.</p> <p><b><u>Course Management:</u></b></p> <ul style="list-style-type: none"> <li>• I am more flexible and forgiving when I am kept informed. If you know you must miss a lab, please tell me ahead of time, and please arrange to get class materials/handouts from a fellow student. If a lab was missed for a valid and officially excused reason, it may be possible to do a lab writeup based on other students' data, <i>provided you understand the theoretical basis of the lab</i>. This can help mitigate the penalty for missing a lab (provided you don't simply drop that grade). Prior authorization from me is required for this.</li> <li>• The theory of General Chemistry Lab draws heavily upon General Chemistry Lecture, but material from these two classes does not overlap completely. While every effort has been made to synchronize the two courses, there will be times when you will need to read ahead in your lecture textbook, and/or read material that is not found in your lecture textbook.</li> <li>• General Chemistry is a year-long course, and this lab's material is cumulative with General Chemistry I Lab. <i>ALL assignments (including exams) will require you to use MOST of the principles learned in CHE 131L</i>, so review the older</li> </ul>

	<p>material as necessary.</p> <ul style="list-style-type: none"> <li>• Each lab has a reading assignment and a pre-lab report that must be read and completed <i>before</i> coming to lab. You are responsible for finding and reading the relevant section(s) of your <i>lecture text</i> that discuss the theory of the principle(s) involved in each week's lab. If you cannot find what section of the lecture text to read, then you do not understand the theory well enough—get help right away.</li> <li>• Cheating and plagiarism will not be tolerated. Students caught will receive an F for that assignment, possibly an F for the course, and may face expulsion from the university. Cheating and plagiarism include copying another student's lab report, instead of writing your own.</li> </ul>
<p><b>Weekly Schedules:</b></p>	<p>Exact schedule distributed in class.</p>
<p><b>Advising &amp; Tutorial Support:</b></p>	