Chemistry 141 (Section 6695): General Chemistry I

(5 units) Syllabus, Spring 2016

General Information

Chemistry 141 is the first semester of the one-year general chemistry course (141-142). It is assumed that you have had a previous course in chemistry and can do problems in stoichiometry, solution concentrations, gas laws and that you can name common inorganic compounds and write their formulas. Also that you are familiar with basic laboratory equipment such as balances, burettes, pipettes, graduated cylinders, etc. Most of the first four weeks of the course will be spent reviewing basic material, material you should have covered thoroughly in a previous course. Following this, new topics will be introduced.) The course consists of three hours of lecture instruction and six hours of laboratory per week**. Attendance at these sessions is required**. Plan to spend, on the average, two hours per lecture hour and one hour per lab hour per week additional study time.

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| ***Instructor:*** | Martin Larter, M.S. |
| ***Office:*** | 30-220 |
| ***Phone:*** | 619-644-7346 |
| ***Office Hours:*** | Mon and Wed 11:00 AM - 12:00 PM, Tues and Thurs 12:00 PM - 1:00 PM  Wed 2:30 PM - 3:30 PM |
| ***Class Time/Location:*** | Lecture: Tuesday , Thursday 9:30 AM – 10:45 AM, Bldg. 30, Room 242  Laboratory: Friday 8:00 AM – 2:10 PM, Bldg. 30, Room 240 |
| ***Textbook:*** | **Chemistry: The Science in Context by Gilbert, Kirss, Foster, and Davies (4th edition)**  **(Bundled with Smartwork homework passcode)**  Alternatively,any good gen chem. text approved by your instructor.  **Optional:** Study Guide for above text. |
| ***Web Resources:*** | **Smartwork** for above text [http://smartwork.wwnorton.com](http://smartwork.wwnorton.com/sw)  Blackboard <http://bb.gcccd.net/>  Instructor Web Page <http://www.grossmont.edu/martinlarter> |
| ***Lecture/Lab Materials:*** | * 141 Laboratory Manual * Quadrille-ruled, double-entry notebook * A pen with non-erasable ink is required for the recording of all laboratory data. * Safety Glasses - Available in bookstore and hardware stores. * Lock for laboratory drawer - Must be Master Lock V69, series approved by stockroom. * Fine Tip Black Sharpie pen or wax pencil or labeling tape * Calculator -- A standard nonprogrammable scientific calculator is required for the course * USB Flash drive for storing lab data |
| ***Prerequisites:*** | * Grade of “C” or better in Chemistry 120 at Grossmont or successful completion of the Chemistry 141 entrance exam. * Working knowledge of intermediate algebra. This includes such topics as solving simultaneous equations, graphing, and logarithms. * Ability to use computers for word processing, data manipulation, and accessing web-based instructional media |

**Important General Class Information**

* Important dates to remember:
  + Last to drop without receiving a “W” Friday, February 8, 2016
  + Last day to apply for CR/NCR Friday, February 26, 2016
  + Last day to drop a class Friday, April 22, 2016
  + Holidays – Friday-Saturday, February 12-15; Monday-Saturday, March 21-26
* Registration should be completed before checking into lab. You will be charged for all breakage or loss of laboratory equipment, in addition you will be assessed a $10 fee if you fail to check out of the laboratory before the end of the semester.

1. Regular attendance is expected. The instructor will plan to drop any student who misses over 9 hours of class. (BUT this is not a guarantee!). If you wish to drop, it is your responsibility to do so.
2. Those enrolled at the end of the semester must receive a letter grade unless they have chosen the P/NP option. An “incomplete” may be arranged for completion of a particular item such as the final exam, but will not be given to allow a repeat of the course. Withdrawal or CR/NC grading is available through admissions and records.
3. All course assignments must be turned in no later than the start of the final examination in order to be considered for credit. Late laboratory assignments will receive a 10% deduction in the week late per week late. Labs will not be accepted more than two weeks late.

# Student Learning Outcomes:

# This course is both a lecture and a lab course. Our major goals for the semester are to become fluent in the language of chemistry and to utilize the tools of chemistry to analyze a variety of chemical phenomena. We will also explore the behavior of materials in the laboratory and use our knowledge of chemistry to explain that behavior.   In particular, each student will be able to do the following upon completion of this course:

* Demonstrate a working knowledge of the language of chemistry.
* Apply quantitative reasoning to chemical problems
* Apply a laws and theories to explain and predict the properties of atoms and molecules.
* Employ laboratory equipment and techniques to collect, organize and evaluate experimental data.

**Course Objectives** (as outlined in the official course outline)

Upon successful completion of this course the student should be able to:

1. Solve stoichiometry problems involving mass, moles, mixtures, gas volumes, and limiting reactants.
2. Solve gas problems using the ideal gas, combined gas, Dalton’s partial pressure, and Graham’s effusion laws.
3. Demonstrate proficiency in chemical nomenclature.
4. Identify and balance net ionic equations for oxidation reduction, acid base and precipitation reactions.
5. Demonstrate quantitative and qualitative understanding of chemical equilibrium,
6. Demonstrate understanding of chemical periodicity in terms of quantum mechanics and atomic structure.
7. Analyze the bonding in chemical compounds in terms of Lewis structures, VSEPR, VB and MO theory.
8. Calculate enthalpies of reactions using Hess’ law, bond energies, and calorimetry.
9. Apply the first and second laws of thermodynamics to chemical systems
10. Solve colligative property problems and explain solution properties in terms of vapor pressure and intermolecular interactions.
11. .Demonstrate ability to analyze a phase diagram.
12. Apply science methodology in a laboratory setting.
13. Demonstrate proficiency in quantitative chemical analysis techniques.
14. Apply kinetic molecular theory to describe the properties of solids, liquids and gases.
15. Demonstrate correct documentation of experimental data in laboratory notebook and presentation of analysis in a formal lab report.
16. Solve problems involving the relationship of pH, pOH, and Kw in aqueous solution.

**Grading Criteria**

Each part is averaged and extrapolated to a % value.

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| Quizzes | 15% |
| Exams | 40% |
| Assignments | 10% |
| Laboratory | 25% |
| Final Exam | 10% |
| **Total** | **100%** |

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| A+ (98-100%) | A (90-98%) | A- (89%) |
| B+ (88%) | B (80-87%) | B- (79%) |
| C+ (78%) | C (67-77%) | D (55-66%) |

Please note however that anyone with less than a 55% average on the exams (including final), or on the labs will receive an F.

* Quizzes -- Quizzes will be given in lab. There will be 9 - 12 quizzes given over the course of the semester. Material from both laboratory and lecture may be included. Much of the material on the quizzes will be similar to the material found in the assignments. **No makeups are given for missed quizzes**. Missed quizzes will count zero points and will be counted as low scores when dropping quizzes.
* Exams -- Exams will be given in the lab as noted in the schedule. Please do not miss these examinations. There is no make‑up for any exam without a valid excuse; a grade of zero will be assigned in those cases. As adults, it is assumed that all students understand exactly what constitutes a valid excuse. If you are confused on this point, talk to the instructor before missing an exam. Failure to do so will result in a grade of zero. It is the student’s responsibility to arrange a make-up exam within one week of the original test date. Please note that make-up exams may not be the same exam given to the rest of the class and may be more difficult than the regularly scheduled exam.
* Assignments -- Smartworks: Online homework will be assigned and graded using Smartwork

Computer homework – These are computer graded homework’s that are available via the internet. If you did not get the text bundle pack which includes the Smartwork access code, you will need to purchase it separately. To utilize the Smartwork online homework website, students will need to register by going to <http://smartwork.wwnorton.com>. and then click on “create an account” under students. You will create your own student account that will require a login and password. The login and password will be used each time you enter the site. The course ID will be given in class. Once you have registered for the class and placed the correct course ID you will see the homework assignments and their due dates.

* + If you are unable to initially purchase an access code, Smartwork offers a free 2-week trial access to allow students to complete their course work. This is only good for two weeks; therefore a code needs to be purchased to continue to access Smartwork after the trial period has expired.
* Laboratory Work -- Your laboratory work must be done and completed during your regularly scheduled time and the reports must be turned in to pass the course. The laboratory portion of the grade will depend on experimental technique, lab etiquette, and the lab reports. Lab reports are due one week after the period in which they are scheduled to be completed. **Late Policy: Labs - lose 20% per week late. No labs accepted more than 2 weeks late.**
* The format for writing up lab reports will be given in a different document.

Deductions will be made from the overall laboratory grade for failure to follow basic laboratory protocols as outlined below:

* + Always wear eye protection (without reminders from the instructor)
  + Wear appropriate clothing- closed-toe shoes, long pants, no sleeveless tops, no dangling jewelry or neckties etc.
  + Tie back long hair
  + Use proper technique when handling glassware (we will review new techniques)
  + Properly clean up any minor chemical spills; report major spills to the instructor
  + Clean up your hood space and put away your equipment at the end of lab, turn off gas, and lock your locker
  + Do not wear contact lenses in the laboratory
  + An electronic version of your formal lab write-up must be submitted to “Safe Assign” via Blackboard

**General Policies:**

* Evaluation will be in the form of exams, quizzes, final, assignments and participation.
* Some of the assignments will be given as homework; others will be written assignments given during class.
* There is no make‑up for any exam without a valid excuse; a grade of zero will be assigned in those cases. As adults, it is assumed that all students understand exactly what constitutes a valid excuse. If you are confused on this point, talk to the instructor before missing an exam. Failure to do so will result in a grade of zero.
* There is no make‑up for any assignment given during class.
* Phones, ipods, nanos, mp3 players, etc **are not allowed during lecture or lab.** If you chose to disregard this class policy you will be asked excuse yourself from class. It is your responsibility to get the notes, etc. you missed for that day.
* Due dates for all assignments will be announced during lecture.
* Students are encouraged to attend all lectures. The responsibility for obtaining lecture notes, assignments and due dates rest entirely with the student, regardless of attendance habits. Extending your holiday vacation does not constitute a valid excuse for missing any exam or assignment. Consult the semester calendar during the first week of class, before you purchase plane tickets, and scheduled your travel plans accordingly.
* Please be aware of the academic integrity policy. In particular, all work (exams, assignments, homework) are to be entirely your own. Also, information may not be programmed into a calculator for use on any exam. Plagiarism is strictly forbidden.
* Students must always show their work for all problems involving calculations in order to receive credit.
* BlackBoard Please get familiar with BlackBoard, as it is used frequently for various course materials, etc.

**Classroom Policies:**

A modicum of formality is required during class to ensure that we maintain an effective learning environment. To that end, please understand that points for classroom participation will be assigned only if the following rules of behavior are observed:

* Each person is to be treated with the respect that every human deserves. The obvious infractions include racial slurs or negative comments based on religious or ethnic background.
* Creating distractions during lecture will not be tolerated. Talking in class should be directed to the group, not between individuals unless we are involved in small group activities.
* Entering the classroom after the lecture has started is considered to be rude and disruptive. Please get to class on time. Do not leave early unless the instructor has been notified previously.
* Taking a break in the middle of lecture is rude and disruptive. Make your restroom visit before entering class.
* Eating and drinking during class **(but never during lab time)** is allowed provided your feeding habits are not disruptive or messy.
* Cell phones and pagers must be turned off or placed on vibrate mode during class and lab. Ringing phones and pagers during class is very disruptive and will not be allowed.
* Do not leave trash on the floor or the desks, please keep the lab neat and tidy
* No videotaping or recording of lectures or labs without the explicit approval of the instructor

**Additional Policies and Information**

**Accommodations for Students with Disabilities:**

Students with disabilities who may need accommodations in this class are encouraged to notify the instructor and contact Disabled Student Services & Programs (DSP&S) **early in the semester** so that reasonable accommodations may be implemented as soon as possible. Students may contact DSP&S in person in room 110 or by phone at (619) 644-7112 (voice) or (619) 644-7119 (TTY for deaf).

**Chemistry Tutoring:**

Peer tutoring will be available in the Science Learning Center (30-252). Chemistry tutoring is also available on the second floor of the library. You can also come to the instructor’s office hour to get help on your chemistry.

**Academic Integrity:**

Cheating and plagiarism (using as one’s own ideas, writings or materials of someone else without acknowledgement or permission) can result in any one of a variety of sanctions. Such penalties may range from an adjusted grade on the particular exam, paper, project, or assignment to a failing grade in the course. The instructor may also summarily suspend the student for the class meeting when the infraction occurs, as well as the following class meeting. For further clarification and information on these issues, please consult with your instructor or contact the office of the Assistant Dean of Student Affairs.

The faculty and the college have determined that integrity and honesty are essential to the academic process and that it is necessary that the written materials submitted by each student in a class reflect his or her own work for that class.

Submitting work as one’s own which has been done either all or part by another is defined as CHEATING. “CHEATING” includes but is not limited to the following

1. The possession or use of unauthorized materials such as crib notes or unauthorized copies of exam material.
2. Copying from another person’s quiz or exam or allowing another person to copy one’s examination material.
3. Copying another person’s lab data or report and turning it in as one’s own or allowing another person to copy one’s data.
4. Using a calculator or computer which contains stored information that can be used while taking a quiz or exam.
5. The possession and/or use at the students work area of a personal communications device during exams or quizzes.
6. Submitting a false report for work that was not actually done.
7. Modifying or attempting to modify an answer on an exam after it has been returned and then claiming it was graded incorrectly.

We hope that each student will support this policy and realize the importance of honesty and integrity in his or her academic effort!

**Supervised Tutoring Referral**

Students are referred to enroll in the following supervised tutoring courses if the service indicated will assist them in achieving or reinforcing the learning objectives of this course:

IDS 198, Supervised Tutoring to receive tutoring in general computer applications in the Tech Mall;

English 198W, Supervised Tutoring for assistance in the English Writing Center (Room 70-119); and/or

IDS 198T, Supervised Tutoring to receive one-on-one tutoring in academic subjects in the Tutoring Center (Room 70-229, 644-7387).

To add any of these courses, students may obtain Add Codes at the Information/Registration Desk in the Tech Mall.

All Supervised Tutoring courses are non-credit/non-fee. However, when a student registers for a supervised tutoring course, and has no other classes, the student will be charged the usual health fee.

**Suggestions for Success:**

It is not a secret that Chemistry can be a difficult course. Let me make a few suggestions for success. First, do the homework. Do all the homework, and do it thoroughly. If there are problems you cannot get, be sure to come to me for help or to ask a question in class.

The second suggestion is to form an informal study group. This would be a group of two, three or four students who meet regularly to work homework, study for quizzes and tests and share work toward writing up labs. It is the experience of this instructor that this is the best setting for learning to go on, as the stronger students teach the weaker and all benefit.

Third, I will be giving you problem sessions before each formal exam. However, the exams will not be exactly in the form of the problem session. The problem sessions are to help you prepare for the exam along with homework, lecture material and lab material.

Last, if at any point you are getting lost or significantly behind, please come see me for help. Helping students is what I am here to do, and it also happens to be what I love to do, so please come for help if at any time you are in need.

##### Chemistry 141 Tentative Schedule Spring 2016

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| Lecture week | Chapter | Topic | Laboratory |
| Jan 25  Week 1 | 1,2 | Matter and Energy: The Origin of the Universe  Atoms, Ions, and Molecules: Matter Starts Here | Check-in /Safety  Writing Lab Reports  Exp. 1 – Standard Deviation |
| Feb 1  Week 2 | 2,3 | Atoms, Ions, and Molecules: cont.  Stoichiometry: Mass, Formulas, and Reactions | Exp. 7 – Copper Lab |
| Feb 8  Week 3 | 3.4 | Stoichiometry: Cont.  Solution Chemistry: The Hydrosphere  Friday Holiday | Holiday |
| Feb 15  Week 4 | 4 | Monday Holiday  Solution Chemistry cont. | Exp. 4 – Conductivity  Problem Session I |
| Feb 22  Week 5 | 5 | Thermochemistry: Energy Changes in Reactions | Exam 1 Chapters 1-4  Exp. 5 – Writing Redox Reactions |
| Feb 29  Week 6 | 5,6 | Thermochemistry cont.,  Properties of Gases: The Air We Breathe | Exp. 9 – Calorimetry – Measuring Heat of Formation |
| Mar 7  Week 7 | 6,7 | Properties of Gases: Cont. | Exp. 8 – Analysis of a Two-Component Alloy  Problem session II |
| Mar 14  Week 8 | 7 | A Quantum Model of Atoms: Waves and Particles A | Exam 2 (Chapters 4-6)  Exp. 6 – Redox Reactions – Activity Series |
| Mar 21 | Spring Break | | |
| Mar 28  Week 9 | 7,8 | Quantum Model of the Atom cont.,  Chemical Bonds: What Makes a Gas a Greenhouse Gas | Exp. 10 – Atomic Spectra  Exp. 11 – Periodicity of Chemical Properties |
| April 4  Week 10 | 8,9 | Chemical Bonds: Cont.  Molecular Geometry: Shape Determines Function | Exp. 12 – Molecular Structure |
| Lecture week | Chapter | Topic | Laboratory |
| April 11  Week 11 | 9 | Molecular Geometry: Cont. | Exp. 11: presentations  Problem session III |
| April 18  Week 12 | 10 | Intermolecular Forces: The Uniqueness of Water | Exam 3 – Chapters 7-9  Exp. 13 – Propagation of Error |
| April 25  Week 13 | 11 | Solutions: Properties and Behavior | Exp. 15 – Determining the Effectiveness of an Antacid |
| May 2  Week 14 | 11 | Solutions cont., | Exp. 16 – Determination of Molar Mass by Freezing Point Depression |
| May 9  Week 15 | 15 | Chemical Equilibrium: How Much Product Does a Reaction Really Make | Exp. 17 – Chemical Equilibrium and Le Châtelier’s Principle  Problem Session IV |
| May 16  Week 16 | 15 | Chemical Equilibrium cont. | Exam 4 – 10, 11, 15  Check out  Final Exam review |
|  |  | **TUESDAY, MAY 24**  **Final Exam 9:25 a.m. – 11:25 a.m.** |  |

**I reserve the right to make changes to the schedule as I see fit. MLL**