

## Chemistry 141 Course Syllabus

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### Course Information

Course: Chemistry 141  
Section: 2527  
Lecture: MW 8:00-9:15 am Room 30-250  
Lab: TTh 8:00-10:50 am Room 30-240

### Instructor Information

Instructor: Diana Vance  
E-mail: [diana.vance@gcccd.edu](mailto:diana.vance@gcccd.edu)  
URLs: [www.grossmont.edu/dianavance](http://www.grossmont.edu/dianavance)  
[www.masteringchemistry.com](http://www.masteringchemistry.com)

Course ID: vance18164

Phone: 619-644-7047

Office: 30-214

Office Hours: M 11:00-1:50 pm  
W 11:00-12:00 pm  
F 8:30-9:30 am

Other times by appointment

in office or Chemistry computer lab 30-252

### 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.**

**Prerequisites:** Grade of "C" or better in Chemistry 120 at Grossmont or successful completion of the Chemistry 141 entrance exam.

A working knowledge of intermediate algebra is mandatory, which includes such topics as solving simultaneous equations, graphing of various functions and the algebra of logarithms.

**While it not a statewide prerequisite, it is expected that you are also able to read, write and comprehend English at a technical level equal to that found in the text for the course. If you are unable to do so, you will not be prepared to succeed in this class as a good amount of class work involves writing – for lab reports, homework, exams and other assignments. Writing that is not understandable and/or contains poor grammar and spelling will be given little or no credit.**

**Text:** *Chemistry, A Molecular Approach* Grossmont College Custom 2<sup>nd</sup> or 3<sup>rd</sup> edition, by Nivaldo J. Tro (Bundled with masteringchemistry passcode).

*MasteringChemistry* account (available with new books or bought online from publisher)

**Optional:** Study Guide for above text.

**Lab:** 141 Laboratory Manual

Quadrille-ruled, double-entry notebook

A pen with nonerasable blue or black ink is required for the recording of all laboratory data.

Safety Glasses (Z-87) - Available in bookstore and hardware stores.

Lock for laboratory drawer - Must be Master Lock (V-69), series recommended by stockroom and sold in the bookstore which comes in a box with a key hole on the back.

Sharpies

USB Flash drive

**Additional requirements:** Calculator -- A standard scientific calculator is required for the course.

**Important Information:**

- Last to drop without receiving a “W” Friday, February 6, 2015
- Last day to apply for CR/NCR Friday, February 6, 2015
- Last day to drop a class Friday, April 24, 2015
- Holidays Friday-Saturday, February 13-14; Monday, May 25
- Registration should be completed before checking into lab. If registered late, bring your validated receipt to lab. You will be charged for all breakage or loss of laboratory equipment, in addition you will be assessed a \$10 minimum fee if you fail to check out of the laboratory before the end of the semester. To make an appointment to check out call the Stockroom at 619-644-7339.
- Regular attendance is expected (A roll sheet may be passed at each class.). The instructor may drop any student who misses over (4) classes. (BUT this is not a guarantee!) If you wish to drop, you should turn in the forms and get a receipt.
- Visit me during my office hours the first week of class for five bonus points on your first exam.
- Those enrolled at the end of the semester must receive a letter grade unless they have chosen the CR/NC 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.
- 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 grade per week late and may be turned in up to two weeks late.
- The use of videotape or other recording devices is only permitted with the express written consent of the instructor.

**Student Learning Outcomes:**

This course is both a lecture and a laboratory course. The 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. The behavior of materials will be explored in the laboratory and use your knowledge of chemistry to explain the behavior. In particular, each student should 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:**

The student should be able to:

- Solve stoichiometry problems involving mass, moles, mixtures, gas volumes, and limiting reactants.
- Solve gas problems using the ideal gas, combined gas, Dalton’s partial pressure, and Graham’s effusion laws
- Demonstrate proficiency in chemical nomenclature.
- Identify and balance net ionic equations for oxidation reduction, acid base and precipitation reactions.
- Demonstrate quantitative and qualitative understanding of chemical equilibrium.
- Demonstrate understanding of chemical periodicity in terms of quantum mechanics and atomic structure.
- Analyze the bonding in chemical compounds in terms of Lewis structures, VSEPR, valence bond theory, molecular orbital theory.
- Calculate enthalpies of reactions using Hess’ Law, bond energies, and calorimetry.
- Apply the first and second laws of thermodynamics to chemical systems.
- Solve colligative property problems and explain solution properties in terms of vapor pressure and intermolecular interactions.
- Demonstrate ability to analyze a phase diagram.
- Apply science methodology in a laboratory setting.
- Demonstrate proficiency in quantitative chemical analysis techniques.
- Apply kinetic molecular theory to describe the properties of solid, liquids and gases.
- Demonstrate correct documentation of experimental data in laboratory notebook and presentation of analysis in a formal lab report.
- Solve problems involving the relationship of pH, pOH and  $K_w$  in aqueous solution.

### Grading Criteria:

Quizzes	variable	15%
Exams	100 points each	35%
Assignments	variable	10%
Laboratory	variable	25%
Final Exam	200 points	15%
<b>Total</b>		<b>100%</b>

Approximately 88% will be an A, 78% a B, 67% a C and 55% a D grade. Please note however that anyone with less than a 50% average on the exams (including final), or on the labs will receive an F.

All grades may be subject to a (+/-) 1-2% instructor evaluation of the student, which may be based on homework, class participation, etc...

- Quizzes -- Quizzes will be given in lab. There will be 9 - 12 quizzes given over the course of the semester and 1 or 2 may be dropped at the instructor's discretion. 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 make-ups are given for missed quizzes. Missed quizzes will count for zero points and 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. *Make-up exams will only be given with an acceptable and verifiable excuse within one week of the scheduled exam.* It is the student's responsibility to arrange a make-up exam within one week of the original test date. Please notify the instructor before the missed exam or within two school days preferably via email, so that accommodations can be made. 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 -- These include computer exercises and homework.
  - Computer exercises -- These are computer graded tutorials that are available via the internet (see below).
  - It is highly recommended that you complete all odd end of the chapter problems.
- 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. To receive credit for formal lab reports, they must be submitted to SafeAssign on Blackboard to check for plagiarism.

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. No eating, drinking or gum chewing in the laboratory.
- 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.

### Academic Integrity Policy:

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.

- Using a calculator or computer which contains stored information that can be used while taking a quiz or exam.
- The possession and/or use at the students work area of a personal communications device during exams or quizzes.
- Submitting a false report for work that was not actually done.
- 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!

**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 60-120 or by phone at (619) 644-7112 (voice) or (619) 644-7119 (TTY for deaf).

**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.

**Computer Course Materials:**

The computer materials for this class are accessed via the World Wide Web. Many of these materials can be accessed at [www.grossmont.edu/dianavance](http://www.grossmont.edu/dianavance) Online computer homework can be accessed at [www.masteringchemistry.com](http://www.masteringchemistry.com) using the Course ID: **vance18164**

**Additional Chemistry Assistance:**

There is a free tutoring service in the library building, and chemistry instructors/tutors are available to all students during "open" help times in the chemistry computer room (30-252). The schedule is posted on the door.

**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. The tutors are excellent resources, but your study group is the most valuable of all.

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.

**I RESERVE THE RIGHT TO MAKE CHANGES TO THIS SYLLABUS AS THE CLASS OR I SEE FIT.**

**141 Tentative Schedule – Spring 2015 – Section 6657 (I reserve the right to make changes.)**

Week	Chapter and Topic	Lab Experiment
Jan 26	1 – Introduction, Problem Solving	Nomenclature/Significant Figures Review Check-in <b>Exp 1 – Standard Deviation</b>
Feb 2	2 – Atoms and Elements	<b>Exp 1 – Standard Deviation cont.</b> <b>Exp 4 – Conductivity</b>
Feb 9	<i>Monday Last Day Drop without a W Friday-Saturday Holiday</i> 3 – Molecules, Compounds, and Chemical Equations	<b>Exp 4 – Conductivity cont.</b> 18.2 – Redox Reactions <b>Exp 5 – Writing Redox Reactions</b>
Feb 16	<i>Monday Holiday</i> 4 – Chemical Quantities and Aq Rxns	<b>Exp 6 – Redox Reactions – Activity Series</b>
Feb 23	5 – Gases: Ideal Gases and Gas Laws; Stoichiometry and KMT	Problem Session Exam 1 (Chapters 1-4)
Mar 2	6 – Thermochemistry – Heat, Energy and Work	<b>Exp 8 – Analysis of a Two-Component Alloy</b>
Mar 9	6 – Thermochemistry – Heats of Reaction, Energy and the Environment	<b>Exp 9 – Calorimetry – Measuring Heat of Formation</b>
Mar 16	7 – The Quantum Mechanical Model of the Atom Problem Session	Cont. Ch 7 Exam 2 (Chapters 5-7)
Mar 23	<i>Spring Break Holiday</i>	<i>Spring Break Holiday</i>
Mar 30	8 – Periodic Properties of the Elements Problem Session	<b>Exp 7 – Copper Lab</b>
Apr 6	9 – Chemical Bonding I: Lewis Theory – Ionic and Covalent Bonds	<b>Exp 10 – Atomic Spectra</b> <b>Exp 11 – Periodicity of Chemical Properties</b>
Apr 13	10 – Chemical Bonding II: Molecular Shapes and Valence Bond Theory	<b>Exp 12 – Molecular Structure</b>
Apr 20	10 – Chemical Bonding II: Molecular Orbital Theory Problem Session <i>Friday Last Day to Drop</i>	<b>Exp 13 – Propagation of Error</b> Exam 3 (Chapters 8-10)
Apr 27	11 – Liquids, Solids, and Intermolecular Forces	<b>Exp 15 – Determining the Effectiveness of an Antacid</b>
May 4	12 – Solutions	<b>Exp 16 – Determination of Molar Mass by Freezing Point Depression</b>
May 11	14 – Chemical Equilibrium	<b>Exp 17 – Chemical Equilibrium and Le Châtelier's Principle</b>
May 18	14 – Chemical Equilibrium cont.	Problem Session/Check-out Exam 4 (Chapter 11, 12, 14)
May 25	<i>Monday Holiday</i> <i>Final Exam – Wednesday, May 27, 2015 7:15-9:15 am</i>	



