

Chemistry 142 Course Syllabus

Course Information

Course: Chemistry 142
Section: 7776
Lecture: MW 8:00-9:20 am Room 36-330C
Lab: TTh 7:55-10:50 am Room 30-240

Instructor Information

Instructor: Diana Vance
E-mail: diana.vance@gcccd.edu
URLs: www.grossmont.edu/dianavance
Phone: 619-644-7047
Office: 30-224
Office Hours: M 9:30-10:50 pm
W 9:30-10:50 pm
Th 11:00-1:00 pm in office or Chemistry computer lab 30-252
Other times by appointment

General Information

Chemistry 142 is the second semester of the one-year general chemistry course (141-142). The basic principles and calculations of chemistry with emphasis on the areas of thermodynamics, kinetics, aqueous equilibrium, coordination chemistry, nuclear chemistry, and an introduction to organic chemistry will be studied. The laboratory will demonstrate the concepts introduced in lecture and in addition will introduce qualitative analysis. 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 141 at Grossmont or equivalent.
Text: *Grossmont Custom Edition Chemistry, A Molecular Approach* 4th edition, by Nivado Tro
MasteringChemistry account (available with new books or bought online from publisher)
Optional: Study Guide for above text.
Lab: 142 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 day to drop without receiving a W Sunday, September 1, 2019
 - Last day to apply for P/NP (CR/NCR) Friday, September 20, 2019
 - Last drop date Friday, November 10, 2019
 - Holidays
 - Labor Day Monday, September 2, 2019
 - Veteran's Day Monday, November 11, 2019
 - Thanksgiving Holiday Thursday-Saturday, November 28-30, 2019
 - Final exam (tentative) Tuesday, December 10, 2019 (9:25-11:25 am)
- 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. No late laboratory assignments will be accepted.
- The use of videotape or other recording devices is only permitted with the express written consent of the instructor.
- Students facing food or housing insecurity are encouraged to contact a Grossmont College Basic Needs Liaison (their names are listed in the web link provided below) or you can send an e-mail to Grossmont.BasicNeeds@gcccd.edu to request information or assistance. I also encourage you to speak with me, if you feel comfortable doing so, so that I may provide additional support to ensure your success in this course.
- Additional information on basic needs resources, including Gizmo’s Kitchen (Grossmont College’s food pantry) is available at: <https://www.grossmont.edu/student-services/offices-and-services/basic-needs>.

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:

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

Course Objectives:

The student should be able to:

1. Analyze kinetic data for reaction order, and write the rate law for chemical reactions based on experimental data.
2. Demonstrate an understanding of the relationship of reaction rates to temperature, concentration, and activation energy.
3. Explain the relationship between reaction mechanism and rate law.
4. Perform calculations involving equilibria of weak acids, weak bases and buffers.
5. Solve solution inventory problems for slightly soluble salts and complex ions.
6. Analyze titration curves of weak, strong, and polyprotic acids and bases to determine concentrations and equilibrium constant values.
7. Calculate the Gibbs free energy for reactions and interpret the relationship between entropy, enthalpy, temperature and spontaneity.
8. Relate free energy to equilibrium constants.
9. Demonstrate understanding of standard reduction potentials in relationship to electrochemical cells.
10. Be able to calculate cell potentials to cells under nonstandard conditions.
11. Solve quantitative electrochemical problems.
12. Identify the components of an electrolytic or galvanic cell.
13. Explain colors of transition metal compounds in terms of ligand field theory.
14. Classify substances on the basis of their chemical reactivity.
15. Describe different types of isomerism in organic and inorganic compounds.
16. Analyze and balance nuclear equations.

17. Demonstrate an understanding of the concepts of fission, fusion, transmutation and natural radioactive decay.
18. Classify organic compounds on the basis of structure and functional group.
19. Name and draw structures for the major classes of organic compounds.
20. Demonstrate proficiency in qualitative inorganic analytical techniques, computer data acquisition and analysis.

Grading Criteria:

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

Approximately 89% will be an A, 79% a B, 65% 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 – There will be a quiz every week that an exam is not scheduled. It is very important for you to stay current and seek assistance when it is needed. 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 -- There will be four exams and one final exam during the semester. The four exams will be given as per the schedule. The final is comprehensive and will be given during our scheduled time during finals week. 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).
 - Homework assignments - Problems and questions from the textbook and/or on www.masteringchemistry.com
- 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. Guidelines for the format for writing up lab reports can be found on the course web site. To receive credit for formal lab reports, they must be submitted to VeriCite on Canvas to check for plagiarism by the due date and time.

Academic Integrity Policy:

This class will be conducted in accordance with the college student code of conduct and basic standards of academic honesty. Cheating and plagiarism (using as one's own ideas writings, materials, or images of someone else without acknowledgement or permission, or other forms of academic dishonesty 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 (all of which may lead to a failing grade in the course) to, under certain conditions, suspension or expulsion from a class, program or the college. Examples include, but are not limited to, using unauthorized materials copying or allowing another student to copy your work during an exam, quiz, or homework assignment, using a programmable calculator, cell phone, or PDA during an exam or quiz. 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 Associate Dean of Student Affairs. Violations will be reported to the school dean for appropriate action.

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!

Accommodations for Students with Disabilities:

Students with disabilities who may need accommodations in this class are encouraged to notify the instructor and contact the Accessibility Resource Center (A.R.C.) **early in the semester** so that reasonable accommodations may be implemented as soon as possible. Students may contact A.R.C. in person in building 60 room 120 or by phone at (619) 644-7112 (voice) or (619) 644-7119 (TTY for deaf).

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 Online computer homework can be accessed at <https://gcccd.instructure.com/>

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.

I reserve the right to make changes to the syllabus and schedule as I or the class see fit.

Chemistry 142 Tentative Schedule - (I reserve the right to make changes.)
Fall 2019 – Section 7776

Week	Chapter and Topic	Experiment
08-19-19	Ch 15 Equilibrium – a review Ch 16– Eq in the Aqueous Phase	Check-in; Lab lecture
		Exp 22 – Chemical Equilibrium
08-26-19	Ch 16 – continued Ch 17 – Aqueous Ionic Equilibrium Sunday, Sept 1 st : Last day to drop w/o a W	Exp 3- Determining K _a
09-02-19	Holiday – Monday, Sept. 2 nd – Labor Day Ch 17 – continued	Exp 4 – pH indicators
09-09-19	Ch17 – continued	Exp 5 – Titration Curves
09-16-19	Ch 17 – continued Ch 14 – Kinetics	Exam I
		Exp 6 – Solubility Calcium Iodate
09-23-19	Ch 14 – continued	Exp 6 –cont.
		Exp 1 - Kinetics of the Dissociation of H ₂ O ₂
09-30-19	Ch 14 – continued Ch 18 – Free Energy and Thermodynamics	Exp 1 – cont.
		Exp 2- Oxidation of an Alcohol
10-07-19	Ch 18 – continued	Exp 2- cont.
		Exam II
10-14-19	Ch 19 – Electrochemistry	Exp 9 – Group I Cations
		Exp 8 – Analysis of a Cation Mixture
10-21-19	Ch 19 – continued	Exp 8 – Analysis of a Cation Mixture
		Exp 16 – Electrochemistry
		Exp 18 – Corrosion: Effect on Nails
10-28-19	Ch 25 – Transition Metals and Coordination Compounds	Exp 16 – cont. & Exp 18 – cont.
		Exp 17 Electrochemistry(B)
		Exp 19 – Ligand Substitution
11-04-19	Ch 25 – continued Friday, Nov 8 th Last day to drop with a W	Exp 19 – cont.
		Exam III
11-11-19	Holiday – Mon., Nov. 11 th – Veteran’s Day Ch 25 – continued Ch 20 – Radioactivity and Nuclear Chemistry	Exp 10 – Group II Cations
		Exp 10 – cont. and Exp 11- Group III Cations
11-18-19	Ch 20 – continued	Exp 11 – cont. and Exp 12 – Anion Analysis
		Exp 12 – cont.
11-25-19	Chapter 21 – Organic Chemistry	Exp 13 – 5 Solution Analysis
		Holiday – Thursday-Saturday, Nov. 22 nd - 24 th
12-02-19	Ch 21 – continued	Lecture Catch-Up, Problem Session, and Check Out ☺
		Exam IV
12-09-19	Final Exam Week: Cumulative General Chemistry Final Exam Tuesday, December 10, 2019 from 9:25 to 11:25 am	