# CHEMISTRY 121 /Fall 2011: SYLLABUS

*(Printable .pdf file) [Translate and/or listen to Syllabus, or any Web page] Choice of over 50 languages.*

---



---

Dr. Ron Rusay Office: *PS 235, tel. 685-1230 x 2508;* Office Hours: *MTWTh 10:00-11:00, Friday by appointment,* plus daily on-line, virtual office hours

E-mail: rrusay@chemconnections.org *or* rrusay@dvc.edu

*Course Homepage:* http://chemconnections.org/general/chem121/

---

***This course is a continuation of Chemistry 120, General College Chemistry. Subject matter includes, but is not limited to:*** *buffers, titration curves, solubility products, thermodynamics, electrochemistry, kinetics, molecular orbital theory, coordination complexes, nuclear chemistry, organic chemistry, spectroscopy, quantitative experiments, and qualitative analysis.*

***Prerequisites:*** **Completion of CHEM 120** ***or equivalent with a C or better.***

**PLEASE CONSIDER CAREFULLY:** The teaching style of these two Chem 121 sections incorporates many innovations in undergraduate teaching methods and technological materials, which depart from, but are built upon traditional textbook-lecture centered science courses. The organization and approach are likely quite different from other courses that you are experienced in and comfortable with. The material will not be treated linearly as simple page turning in relation to the course textbook. You will be challenged personally and collectively. You will be asked to find and access a variety of information, to appraise its value, and to use it constructively to answer questions, to solve problems, and to build knowledge. You will have various assets and tools available that go well beyond the textbook and lecture notes. You will need to decide how to use them effectively, and to develop your own personal learning plan accordingly. Not all knowledge in chemistry will be provided to you to repeat back accurately for a grade as you are accustomed to in most courses. Your plan will most likely be different than anyone else's. Without a plan that you can use productively and adjust as the course progresses, you will likely not meet your personal objectives. This metacognitive approach to teaching-learning will translate to any of your other courses and more importantly empower you to effectively address any topic in any discipline at anytime in your careers.

---

**1. Class Meetings:** *TTh 11:00-12:15* ***PS275***

**Lab Meetings: Sec. 2604,** *MW 11:00-1:50* ***PS213***
**Sec. 2611,** *MW 2:30-5:20* ***PS213***
***Attendance is required in both class and laboratory.***
**Classes begin:** *8/12*; **Holidays:** *9/4, 10/23, 11/11, 11/24-11/25*; **Last drop date w/o W on transcript** *8/25*, **Last date to withdraw** *11/18*, **Last date to drop w/ a refund** *8/25*
**Tentative in-class Exam dates:** *9/20, 10/25, 12/6*
**Final Exam:** *Week of 12/12 Exact Date & Time TBA*

---

**2. References and Equipment:**

**1: TEXT:** Chemistry 7/e. Zumdahl & Zumdahl **(HIGHLY RECOMMENDED)**; ***ALTERNATIVE:*** **http://chemwiki.ucdavis.edu**
**PLEASE CONSIDER YOUR CHOICE CAREFULLY: Unless you are highly organized, disciplined, and can easily adapt to informational gaps, the Chem 121 ChemWiki, which is a work-in-progress and not completely finished, is not recommended as a stand-alone textbook. In this case, you should rely on the Zumdahl text as your primary resource with the ChemWiki as a supporting resource.**

**2: i<clicker (REQUIRED/MUST HAVE) http://www.iclicker.com/dnn/Products/iclicker/tabid/151/Default.aspx**

**3. LAB MANUAL: "Chemistry 121 Experiments", 2nd Edition, Diablo Valley College Chemistry Department (7/2010 14) (REQUIRED)**

**4. ALEKS Online Homework/Tutorials/Self Assessment: http://www.aleks.com/sign_up Course Code: D6PY6-LTPHG (REQUIRED/MUST REGISTER) *FREE to all Chem 121 sec. 2604 and sec. 2611* students. Must be used through the Internet and the latest version of a Web Browser. If you use a Mac, Safari is highly recommended.**

**5. A lab notebook with numbered pages and tear out copy sheets. (Staples or Bookstore) (REQUIRED)**

**6. Lab safety glasses with side shields or goggles. (REQUIRED)**

**Scientific Calculator.**

**Qualitative Analysis & Properties Of Ions, Etc, Slowinski ISBN 0-03-031234-5 Copyright 90 Publisher Saund CollEdition (REQUIRED)**

---

**3. Course Outline / Student Learning Objectives/ Topics**:
Zumdahl 7/e, Chaps. 9, 12, 14, 15, 16, 17, 18, 21, 22 (*Application of portions of:* 4/ 6/ 7/ 8/ 9/ 10/ 11), *plus selected topics*

***See:***
**http://chemconnnections.org/general/chem121/assign11.html**
**http://chemconnections.org/general/chem121/CHEM-121.cor.pdf**
**http://chemconnections.org/general/chem121/CHEM-121.slos.pdf**

---

**4. Class Preparation & Homework:** Practice and staying current with the course content on a daily basis are essential to your success in this course of study. The amount of preparation, practice and time required will differ for each of you. A scientific study of students at Notre Dame University has shown that final grades in general chemistry are directly related to the amount of time students invest. In order to score well on exams & quizzzes, the questions to ask yourself while going through this experience are, "Can I teach this concept to someone else? And, can I recognize and correctly answer questions that are similar to the ones contained in the in-class clicker response questions, the worksheets, the on-line/textbook problems, and the class/lab activities?". Correlating the time related to your answer to these questions will provide an estimate of what you will likely need to invest. Exams will be designed to test content & concepts based on these materials. There will be periodic chapter/topic quizzes that will also be based on these materials. Recommended order of emphasis is: 1) Read the on-line class slides & i-clicker questions linked from the calendar before coming to each class 2) ***Collaboratively*** complete all worksheets in a group with 1-3 partners [ No more than 4 per group.] 3) ***Individually*** complete all on-line homework questions, 4) as time allows and your proficiency may require do as many end of chapter textbook problems as possible; refer to the course assignments page and calendar page.

---

**5. Grading:**
***Attendance/ Class Participation and Homework are valued at 10% of the TOTAL grade.*** The class portion of the grade is worth 65% of the total grade. It will be comprised of quizzes and worksheets, (which in total equal one exam), 3 in-class exams and a final exam, which is equal to two hour exams. A laboratory grade worth 25% will account for the remainder of the total grade. Final letter grades will be assigned based on: 90-100 A; 80-89 B; 65-79 C; 50-64 D;<50 F, using a normalized class average. ***NOTE:*** The DVC Code of Conduct will be strictly enforced. Cheating and plagiarism are unacceptable and will unconditionally result in a failing grade. *[Cell phones will not be allowed in rooms during exams and quizzes.]* *SEE: DVC Academic College Policies*

---

**6. Attendance & Absences:**
On-time attendance at all scheduled class and lab meetings is unconditionally expected. If you arrive late for class or lab, points will be deducted. Two late arrivals will be excused provided that you see Dr. R. immediately after class or lab. Since arriving late disrupts the class, repeated tardiness may result in you being suspended or dropped from the course. If you are to miss a class, quiz, exam or lab due to illness or other legitimate reason, you must advise Dr. R. prior to, or on the day that it is scheduled. If you do not do so, there will be no possibility of making up any missed work or of being excused from assignments, activities or the material presented. Notifying Dr. R. can be done by calling: 685-1230, ext. 2508 or leaving a message with the department secretary (ext. 2423) or sending an e-mail to Dr. R. ***If you miss a cumulative total of 4 laboratories or 6 lectures regardless of the reasons, you may be dropped from the course.*** [*College policy provides for a student being dropped from a course if the student misses a cumulative total of two weeks of class/lab meetings.*]

---

**7. Laboratory:**
The laboratory will consist of a set of experiments and activities relating to qualitative analysis, which is ~25-30% of the overall lab. These will involve hands-on in lab identification of unknown cations based on the differences in the solubilities of certain of their salts. The remaining experiments will parallel the class/lecture topics. Some experiments and activities will be done on a group or team basis, others indivdually. For each experiment, accurate records **must** be kept in your laboratory notebook. You will be advised of the format for record keeping and reporting for the qualitative analyses experiments.

For experiments that are non-qualitative analysis you are required to prepare a pre-lab report prior to beginning the lab and submit a finished report on completion of the lab. The bold information must be completed in the notebook prior to the experiment and shown to Dr. R. for signature prior to starting the experiment. Data tables are to be left blank for the pre-lab and the experimental data entered as it is acquired.

A finished, complete lab report must include all pertinent information **including unknown numbers** where unknowns are part of the experiment. Finished copies of the report will be collected. Lab Reports must be neat, legible and submitted in the following format:

**Title**

**Purpose:**
A brief statement of the experiment's objective: Answer the question...what is your aim?

**Procedure:**
Include what you actually did so that someone else could repeat your work. The directions can be an outline of the actual conduct of the experiment in your own words. This section should be written in the past tense. Refer to the Lab Text's instructions but do not copy them word for word.

**Chemical Reaction(s):**
In experiments with chemical reactions include: complete, balanced chemical equation(s); as many as appropriate.

**Data:**
All physical-chemical data used in the experiment (molecular weights, density, etc.) Should be provided in neat, well organized Tables of labeled experimental data with correct units and appropriate number of significant figures. If tables are provided in the Lab text, they can be appended. Raw data & observations should be included in this section.

**Calculations**:
Show how the numerical data was handled (i.e. the general mathematics): algorithms (formulas and equations), unit factor method, etc. and include one example. Do not include calculations for all trials, but do show average(s) and average deviation(s) for multi-trial experiments as required. Be as neat and concise as possible.

**Results and Conclusions:**
Re-state in one or two short sentences the results and your conclusions versus the intended purpose of the experiment. Use tables if appropriate.

**Questions**:
Answer any pre-lab and/or post-lab assigned questions.

---

The laboratory component of the course is essential to the overall course. ***A failing grade in the lab portion will result in a failing grade for the course.***

**Safety:**
Laboratory safety is of the utmost importance to your well being and to your lab mates. Chemical exposure must be minimized through good lab practices. All wastes must be properly disposed of. eye protection must be worn at all times. No one can work in the lab without an instructor being present. Only scheduled experiments are allowed. Bare feet, food, drink, eating, and conduct which places anyone at risk are unacceptable. Violation of safety standards can result in being dropped from the course.

---

## Internet use and related:

The course will employ the Internet and Information Technologies in a variety of ways. This is NOT a course which teaches the Internet. The course is designed to use the Internet with its wealth of resources as a transparent tool to teach chemistry. Combined with good study practices, it will help you, the student, to better and more easily understand concepts and to make your learning experience broader and more successful.

Students are not required to have a computer or off campus access to a computer.

Free e-mail accounts are available. Each student **MUST** have their own e-mail account for class communication. See Dr. R. if you need assistance in obtaining an e-mail account.

There will be no charges for the use of the Internet, computers or course related software.

The course will employ the Internet and Information Technologies in a variety of ways. The class will need the latest version of a Net browser for the Internet as well as other computer programs. All of these programs will be free for student use. Since it is realized that not every student has a computer or off-campus access to a computer, computer related assignments are devised and time budgeted so that these assignments can be done while on the DVC campus by accessing the Internet from the Physical Science building's computers or other computers on the DVC campus that are available to DVC students.

Students are expected to visit the course Homepage regularly. The Homepage is the main tool for communicating information to the class. It includes all information on the course in addition to providing Internet links to many useful Web sites and materials for the course. The Homepage is a living course document. Information will be added as the course proceeds and past information will be archived.

---