

Chemistry 200 (General Inorganic Chemistry I) Syllabus and Schedule

Basic Course Information

| | | | |
|-------------------|--|--------------------|---|
| Semester: | Summer 2016 | Instructor Name: | Dr. Alto Benedicto |
| Course Title & #: | Chemistry 200 | Email: | alto.benedicto@imperial.edu |
| CRN #: | 30187 | Units: | 5 |
| Classroom: | 2715 | Office #: | 2779 |
| Class Dates: | Jun 20 to July 28, 2016 | Office Hours: | immediately after class or by appointment |
| Class Days: | MTWR | Office Phone #: | (760)355-5751 |
| Class Times: | MTWR 10:00 –12:10 pm (Rm 2715) MTWR 12:30 –2:40 pm (Rm 2715) MTWR 3:00 – 5:10 pm (Rm 2715) | Emergency Contact: | Department Secretary (760) 355-6155 |

Course Description

Basic principles and calculations of chemistry with emphasis on stoichiometry and dimension analysis applied to various problem types. Fundamental principles and theory of atomic and molecular structure as related to bonding and molecular geometry. Study of kinetic molecular theory, the first law of thermodynamics, periodic relationships of the elements, physical states of matter, solution chemistry, and oxidation-reduction. The laboratory is closely related to lecture topics and includes methods of classical experimentation as well as certain instrumental analysis. (C-ID CHEM 110) (CSU, UC) Prerequisite: Chem 100.

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

- perform dimensional analysis calculations as they relate to problems involving percent composition and density. (ISLO2)
- write chemical formulas, and name inorganic compounds. (ISLO2)
- relate chemical equations and stoichiometry as they apply to the mole concept. (ISLO2)
- identify the basic types of chemical reactions including precipitation, neutralization, and oxidation-reduction. (ISLO4)
- knowledge of atomic structure and quantum mechanics and apply these concepts to the study of periodic properties of the elements. (ISLO4)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Student will demonstrate ability to perform dimensional analysis calculations as they relate to problems involving percent composition and density.
2. Student will write chemical formulas, name inorganic compounds, and demonstrate a knowledge of basic atomic theory
3. Student will relate chemical equations and stoichiometry as they apply to the mole concept, molarity, and acid-base titrations. Student will derive formulas from percent composition.
4. Student will identify the basic types of chemical reactions including precipitation, neutralization, and oxidation-reduction.
5. Student will demonstrate knowledge of atomic structure and quantum mechanics and apply these concepts to the study of periodic properties of the elements.
6. Student will relate the general concepts of atomic structure to a study of ionic bonding.
7. Student will relate the general concepts of covalent bonding and molecular structure.
8. Student will demonstrate the first law of thermodynamics both in theoretical and practical contexts and apply the theory to the solution of Hess' Law.
9. Student will manipulate the various gas laws in both theory and practice to solve mathematical problems relating to the behavior of both ideal and non-ideal gases.
10. Student will describe the general properties of liquids and solids including intermolecular attractions and phase changes.
11. Student will relate the general properties of solutions and employ knowledge of concentration to explain colligative properties. Student will investigate the phenomenon of vapor pressure.
12. Student will demonstrate knowledge of computer-assisted methods of data acquisition, analysis and presentation.

Textbooks & Other Resources or Links

1. *Chemical Principles: The Quest for Insight*, by Peter Atkins, Leretta Jones, Leroy Laverman (W.H. Freeman and Company, 6th Ed, ISBN: 1-4292-8897-3)
2. *Chemistry in the Laboratory*, by James M. Postma, Julian Roberts, and J. Leland Hollenberg (W.H. Freeman and Company, 7th Ed, ISBN: 1-4292-1954-8)
3. Chemistry 200 Supplementary Laboratory Manual available at **IVC Chemistry/STEM Club** (\$15)
4. Eight (8) Scantron Sheets Form No. 889-E (submitted on the second day of class) and pencil
5. safety goggles (\$5 - \$10; needed on second class day), non-programmable scientific calculator (\$15 - \$25), close-toed shoes
6. registration with www.saplinglearning.com for online HW (\$40) – requires credit card

Course Requirements and Instructional Methods

1. Attendance and remaining during the entire class period is mandatory for Chem 200 Lab Classes. A Lab roll call will be initiated by the instructor within the first 5 minutes of Lab class. If you are sent out during class (e.g., failure to obey safety rules such as wearing Safety Goggles, etc.), you will be marked absent for that Lab, and will garner zero points for the experiment.
2. There are **no make-up Exams or Lab Classes**. A score of **zero (0)** will be recorded unless the absence is attributed to representation of official college functions. It is the student's responsibility to show proof of such function **prior** to the date of the absence.
3. During Exam, the only things allowed are: **pencil, nonprogrammable calculator, and I.D.** You will be supplied with a Periodic Table and a Scantron. You may use the Exam Questionnaire as scratch paper. The Exam Questionnaire, Periodic Table, and Scantron are to be submitted at the end of the Exam. **Possession of**

electronic devices (phones, ipod, programmable calculator, etc.) during Exam is considered cheating and will be dealt with according to IVC policy.

- Each student is REQUIRED to **buy the Chem 200 Supplement Lab Manual** and to **sign up for online HW no later than the second day of class**. Personal laptop is highly encouraged for online HW during Lab Class.
- Due dates for Online HWs are found in the Class Schedule of Topics (see last page)**. For help in online HW beyond the instructor, go to support@saplinglearning.com.
- Prior to start of Lab Class, read the relevant experiment and answer any Pre-Lab Questions. **Pre-Lab Questions sheet should be torn from the Lab Manual and submitted to the Instructor within two (2) minutes from start of Lab Class to gain full points**. So tear out the relevant Pre-Lab sheets before coming to class, and don't be late!!!
- Before leaving the Lab Class, make sure the **instructor has signed** your Lab Data Sheet. Data should be recorded in **ink**. Cross-out mistakes with a single strike-through line. **Data Sheets and Post-Lab Questions are to be submitted within the first two minutes of the next time Lab meeting**.
- Lab clean-ups are done 15 minutes before the end of lab. A **wet towel** should be used to wipe the lab bench in order to gain full points. Make sure sink and work area is clean. Points will be deducted to the entire class if the common work areas (fume hood, analytical balances) are dirty.
- There are no bonus work available. Kindly seek assistance immediately to clarify any questions.
- If this is an Hybrid section, with the lecture discussion being done online, you must have access to a computer and an Internet connection. No other special technical skills are needed other than knowledge on how to use Blackboard.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

| Assessment Type | How many | Total Points |
|-------------------------|----------|--------------|
| Lecture Exams | 5 @ 60 | 300 pts |
| Lecture Final Exam | 1 @ 150 | 150 pts |
| Online Homework | 17 @ 20 | 340 pts |
| Lab Experiments | 8 @ 20 | 160 pts |
| Lab Exam and Discussion | 1 @ 50 | 50 pts |

OVERALL POINTS = 1,000 pts

| Grading Scale Percentage | Letter Grade |
|--------------------------|--------------|
| 85.00% to 100 % | A |
| 75.00% to 84.99% | B |
| 60.00% to 74.99% | C |
| 50.00% to 59.99% | D |

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. **A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped.** For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.
- **Absences during Lab Classes, or leaving during Lab Classes** automatically result in a **grade of zero (0) for the Lab Experiment.**

Classroom Etiquette

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the [General Catalog](#).
- Children in the classroom: Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

Online Netiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the importance of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- **Plagiarism** is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help.
- **Cheating** is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [General Catalog](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Additional Student Services

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- **Blackboard Support Site.** The Blackboard Support Site provides a variety of support channels available to students 24 hours per day.
- **Learning Services.** There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your [Campus Map](#) for the [Math Lab](#); [Reading, Writing & Language Labs](#); and the [Study Skills Center](#).
- **Library Services.** There is more to our library than just books. You have access to tutors in the [Study Skills Center](#), study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the [Disabled Student Programs and Services](#) (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313. Please contact them if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee.

- **Student Health Center.** A Student Health Nurse is available on campus. In addition, Pioneers Memorial Healthcare District provide basic health services for students, such as first aid and care for minor illnesses. Contact the IVC [Student Health Center](#) at 760-355-6128 in Room 1536 for more information.
- **Mental Health Counseling Services.** Short-term individual, couples, family, and group therapy are provided to currently enrolled students. Contact the IVC [Mental Health Counseling Services](#) at 760-355-6196 in Room 2109 for more information.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

Anticipated Class Schedule/Calendar

| MTG | DATE | CHAPTER READINGS | LABORATORY <i>Online HW due at 11:55 pm</i> |
|-----|--------------|---|---|
| 1 | June 20 (M) | Fund A: Matter & Energy (what is chem, sig fig, unit conversion) | Safety Quiz and Locker Check-in Intro to online HW |
| 2 | June 21 (T) | Fund B: Elements & Atoms (Dalton's Theory, Nuclear Model, Organization of Periodic Table) | M-1: Measurements M-2: Mass and Volume Relationships |
| 3 | June 22 (W) | Fund C: Compounds Fund D: Nomenclature (Assigning Oxid Number, Naming) | M-A Nomenclature HW A, B, C due |
| 4 | June 23 (Th) | Fund E: Moles & Molar Mass | Lecture Exam 1 (covers Fund A, B, C, D) HW D due on Thurs HW E due on Fri Bonus "Practice and Math Rev" due on Sat |
| 5 | June 27 (M) | Fund F: Determination of Composition (wt %, emp formula) | IVC 5: Formula of Hydrate HW F due |
| 6 | June 28 (T) | Fund H: Chemical Equations (types of rxn, balancing chem eqn) Fund I: Precipitation Reactions (Net Ionic Eqns) | M-7: Chemistry of Oxygen HW H,I due |
| 7 | June 29 (W) | Fund L: Stoichiometry Fund M: Limiting Reagents | M-18: Net Ionic Equations HW L due |
| 8 | June 30 (Th) | Fund G: Mixtures & Solutions (concentration units, dilution) | Lecture Exam 2 (covers Fund E, F, H, I, L, M) HW M due |
| 9 | July 5 (T) | Fund J: Acids and Bases (Definitions, Properties, Neutralizations) | M-34: Redox day 1 & 2 HW G due |
| 10 | July 6 (W) | Fund K: Redox Reactions (Balancing Redox Eqns) | M-34 con't HW J due |
| 11 | July 7 (Th) | Ch 1: Quantum World (EM radiation, electron configuration, quantum numbers, orbital diagrams) | Lecture Exam 3 (covers Fund G, J, K, L, M) HW K due |
| 12 | July 11 (M) | Ch 2: QM in Action: Atoms (Trends in Periodic Table: ionic radius, etc.) | IVC 4: Titration day 1 & 2 HW 1 due |
| 13 | July 12 (T) | Ch 3: Chemical Bonds (Lewis structure & exceptions, resonance, formal charge, bond strength) | IVC 4: Titration day 2 & 3 HW 2 due |
| 14 | July 13 (W) | Ch 4: Molecular Shapes & Structure (VSEPR, VB theory, MO theory, | M-B: Lewis structures HW 3 due |

| MTG | DATE | CHAPTER READINGS | LABORATORY <i>Online HW due at 11:55 pm</i> |
|-----|--------------|---|--|
| | | hybridization) | |
| 15 | July 14 (Th) | Con't of Ch 4 | Lecture Exam 4 (covers Ch 1, 2, 3, 4) HW 4 due |
| 16 | July 18 (M) | Ch 5: Gases (Kinetic Molec Theory, Gas Laws, Diffusion & Effusion, Graham, Maxwell, Real Gases) | M-14: Heat Capacities of Metals |
| 17 | July 19 (T) | Ch 8: Thermodynamics 1 st Law (Hess Law, BDE, Born-Haber cycle) | M-23 Equilibrium dry lab only HW 5 due |
| 18 | July 20 (W) | Con't of Ch 8: (Heat Capacity, Phase Diagram) | IVC 10: Determining the Dissociation Constant of an Acid HW 8 due |
| 19 | July 21 (Th) | Ch 11: Chemical Equilibria (Le Chatelier, Keq, ICE) | Lecture Exam 5 (covers Ch 5, 8, heat capacity, phase diagram) HW 11 due |
| 20 | July 25 (M) | Ch 12: Acids & Bases (Ka | IVC 8: Buffers HW 12 due |
| 21 | July 26 (T) | Ch 13: Aqueous Equilibria | LAB EXAM HW 13a due |
| 22 | July 27 (W) | Con't of Ch 13 | Locker Checkout HW 13b due |
| 23 | July 28 (Th) | Finals Prep | LEC FINAL EXAM |

Tentative, subject to change without prior notice