



Chemistry 200 (General Inorganic Chemistry I) Syllabus and Schedule

Basic Course Information

Semester:	Summer 2025	Instructor Name:	Dr. Alto Benedicto
Course Title & #:	Chemistry 200 (Hybrid)	Email:	alto.benedicto@imperial.edu
CRN #:	30174	Webpage (optional):	N/A
Classroom:	Room 2716 (Lab is in-person)	Office #:	2779
Class Dates:	Jun 16 to July 24, 2025	Office Hours:	MTWTh 3 pm – 7:50 pm (Rm 2716)
Class Days:	Tutor available (see page 5)	Office Phone #:	(760) 355-5751
Class Times:	Lec (asynchronous online); Lab (MTWR 12:30 – 2:40 pm)	Emergency Contact:	(760) 355-5751
Units:	5	Class Format/Modality:	Asynchronous Hybrid

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)

Course Prerequisite(s) and/or Corequisite(s)

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:

1. Solve chemical problems using modern atomic theory (ISLO 2, ISLO 4)
2. Perform chemical experiments in a scientific manner, using proper techniques, analysis, and safety equipment. (ISLO 2, ISLO3, ISLO4)



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Course Objectives

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

Textbooks & Other Resources or Links

1. **Two sites used by IVC for our textbooks:**
 - a. <https://chem.libretexts.org>
 - i. For the textbook: click [https://chem.libretexts.org/Bookshelves/General_Chemistry/Chemistry_\(OpenSTAX\)](https://chem.libretexts.org/Bookshelves/General_Chemistry/Chemistry_(OpenSTAX))
 - ii. For exercises: click https://chem.libretexts.org/Bookshelves/General_Chemistry/Exercises%3A_General_Chemistry/Exercises%3A_OpenStax
 - b. Chemistry, by Paul Flowers, Klaus Theopold, Richard Langley, Stephen F. Austin, and William R. Robinson (OpenStax, 2015, ISBN: 1-938168-39-9)
 - i. For this textbook: click <https://openstax.org/details/books/chemistry>
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** (\$20)
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 Macmillan Learning Achieve for online HW (\$50) – requires credit card.
You can register by going to our course in Canvas, and then clicking Macmillan Learning (located on left margin) while INSIDE our Canvas course and follow instructions.

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 is **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 absence.
3. During the 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.
4. 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.
5. **Due dates for Online HWs are found in the Class Schedule of Topics (see last page)**. For technical assistance beyond the instructor, call Macmillan Technical Support on 1-800-936-6899. Also, there's online tutoring with a live person in **Online Tutoring** (embedded inside Canvas).
6. Prior to the 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!!!
7. 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**.
8. 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 the 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.
9. There is no bonus work available. Kindly seek assistance immediately to clarify any questions.
10. 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 Canvas.

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

<i>Assessment Type</i>	<i>How many</i>	<i>Total Points</i>
Lecture Exams	5 @ 60	300 pts
Lecture Final Exam	1 @ 200	200 pts
Online Homework (in Achieve)	11 @ 15 3 @ 20; 1 @ 30	255 pts
Lab Experiments, Exercises	6 @ 20 4 @ 20	200 pts
PhET Simulations, Labster Simulations	1 @ 10 1 @ 6, 1 @ 12	28 pts
Lab Exam and 4 Discussions	1 @ 50 1@5; 3@2	61 pts

OVERALL POINTS = 1,044 pts

<i>Grading Scale Percentage</i>	<i>Letter Grade</i>
85.00% to 100 %	A
75.00% to 84.99%	B
60.00% to 74.99%	C
50.00% to 59.99%	D

Academic Honesty (Artificial Intelligence -AI)

IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

Accessibility Statement

Imperial Valley College is committed to providing an accessible learning experience for all students, regardless of course modality. Every effort has been made to ensure that this course complies with all state and federal accessibility regulations, including Section 508 of the Rehabilitation Act, the Americans with Disabilities Act (ADA), and Title 5 of the California Code of Regulations. However, if you encounter any content that is not accessible, please contact your instructor or the area dean for assistance. If you have specific accommodations through **DSPS**, contact them for additional assistance.

We are here to support you and ensure that you have equal access to all course materials.



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Course Policies

- 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.**
- 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.

Other Course Information

Our Class Tutor _____ hours are (MWF: _____)(TThS: _____) (Zoom ID 930 5535 9930—ask for _____).

Financial Aid

Your Grades Matter! In order to continue to receive financial aid, you must meet the Satisfactory Academic Progress (SAP) requirement. Making SAP means that you are maintaining a 2.0 GPA, you have successfully completed 67% of your coursework, and you will graduate on time. If you do not maintain SAP, you may lose your financial aid. If you have questions, please contact financial aid at finaid@imperial.edu.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit <http://www.imperial.edu/studentresources> or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

<i>Day</i>	<i>DATE</i>	<i>CHAPTER READINGS</i> <i>(Lecture recordings AND YouTube videos available)</i>	<i>Achieve Online Homework and Canvas Discussion</i> <i>due at 11:55 pm</i>	<i>LABORATORY and Exams</i> <i>Exam is on Lab Hours (3:30-5:10)</i>
1	Jun 16 (M)	Ch 1: The Chemical World (Classification of Matter/Changes; Measurement—Sig Figs, Dimensional Analysis, Accuracy)	HW 1 due next day <i>Canvas Discussion 1 due</i>	Safety & Locker Check-in; Labster 1: Lab Safety 'due' (in Canvas)
2	Jun 17 (T)	Ch 2: Atoms, Molecules, Ions (Atomic Theory; Atomic Number, Mass Number, Isotopes; Nomenclature of Hydrates)	HW 2 due next day	M-2: Mass and Volume Relationships
3	Jun 18 (W)	Ch 3: Composition of Substances and Solutions (Moles, Molar Mass, % Composition, Empirical & Molec Formula, Molarity)	HW 3 due next day	PhET Sim: Build An Atom due in Canvas
4	Jun 23 (M)	Ch 4: Stoichiometry (Balanced Eqn, Classifying Rxns, Yields)	HW 4 due next day	M-18: Net Ionic Equations
5	Jun 24 (T)	Con't of Chap 4		Exercises on Stoichiometry
6	Jun 25 (W)	Ch 6: Electronic Structure and Periodic Properties (Bohr Model, QM model, Quantum Numbers, Electron Configurations, Orbital Diagrams, Periodic Trends)	HW 6 due next day	M-A Nomenclature
7	Jun 26 (Th)	Ch 7: Chemical Bonding I (exceptions to Lewis structure, Ionic/Covalent/Metallic Bonding, Formal Charges, Resonance, Molecular Geometry, Polarity)	HW 7 due next day	Lecture Exam 1 (Chap 1,2,3,4) 3:30 pm - 5:10 pm
8	Jun 30 (M)	Ch 8: Chemical Bonding II: (Valence Bond vs Molecular Orbital Theory)	HW 8 due next day	M-B: Lewis structures HW 7 due next day
9	July 1 (T)	Ch 9: Gases (Ideal Gas Law, Real Gases, Effusion vs Diffusion, Stoichiometry)	HW 9 due next day	M-34: Redox day 1 & 2
10	July 2 (W)	Ch 10: Liquids and Solids (Intermolecular Forces, Phases Diagrams, Lattice Structures, Calorimetry)	HW 10 due next day	Lecture Exam 2 (Chap 6,7,8)
11	July 7 (M)	Ch 11: Solutions and Colloids: (Solubility; Colligative Properties; Colloids, molality)	HW 11 due next day	IVC 4: Titration day 1 & 2 HW 11 due TODAY
12	July 8 (T)	Ch 13: Chemical Equilibrium (Equilibrium Constant, Le Chatelier's Principle, ICE box)	HW 13 due next day	IVC 4: Titration day 2 & 3 HW 13 due July 9
13	July 9 (W)	Con't of Chap 13		Exercises on Equilibrium ICE box
14	July 10 (Th)	Ch 14: Acid-Base Equilibria (definitions, pH, weak acids, pKa, polyprotic acid, buffers)	HW 14a due next day	Lecture Exam 3 (Chap 9,10,11, stoichiometry)
15	July 14 (M)	Con't of Chap 14: (Titration; hydrolysis of salt solutions)	HW 14b due next day	Exercises on Titration of Weak Acid/Base
16	July 15 (T)	Con't of Chap 14		Labster 13: Advanced Acid and Base



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17	July 16 (W)	Ch 15: Solubility Equilibria (K_{sp} , complex ion formation, common ion effect)	HW 15 due next day	Lecture Exam 4 (Chap 13,14)
18	Jul 17 (Th)	Ch 5: Thermochemistry (Calorimetry, Hess Law, Std Enthalpy of Formation)	HW (5 &16) due next day	LOCKER CHECKOUT
19	July 21 (M)	Ch 16: Thermodynamics 1 st Law (Bond Dissociation Energy, Born-Haber cycle) NOTE: Omit Second and Third Law for next course		Exercises: Hess Law & Born-Haber Cycle
20	July 22 (T)	Lecture on Lab Techniques		Lecture Exam 5 (Chap 15,5,16)
21	Jul 23 (W)	(Finals is in Macmillan Achieve)	LEC FINAL EXAM	(3:30 pm - 5:40 pm) (2 hr 10 min)
22	Jul 24 (Th)		Lab Exam (Lab Techniques)	3:30 pm – 4:30 pm (1 hour)

*****Subject to change without prior notice*****