

Preparation Course for General Chemistry
Winter- 2019 (CHEM-25-01 & 02)
Section-1 (33756); Section-2 (33760)

Lecture (Sections 01 & 02): Tue & Thu -10:30 AM - 12:20 PM -- Room S32

Lab (Section-01): Tue- 7:30 AM - 10:20 AM - Room SC2208

Lab (Section-02): Th- 7:30 AM - 10:20 AM - Room SC2208

Instructor: Dr. Hema Ramakrishna

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Office Hours: Tuesday- 12:30 - 1.30 PM; SC1 second floor.

Thursday-12:30 - 1:30 PM; SC1 second floor.

Description: An Introduction to core theory and problem solving techniques of chemistry as preparation for Chemistry 1A at De Anza College. The course will include an overview of many of the most important topics in general chemistry, including stoichiometry, atomic and molecular structure, solutions, scientific measurement, the periodic table, and chemical reactions. The course material will be approached from both a conceptual and mathematical standpoint.

Required materials:

1. **Lecture Textbook:** Introduction to Chemistry, 5th edition by Bauer, Birk, and Marks (McGraw-Hill)
2. **Lab Textbook:** Laboratory Manual for Preparation for General Chemistry (Create version for De Anza), Applegate, Neely, and Sakuta
3. A scientific calculator that has at least log and exponential functions is required.
4. 8.5 x 11 permanently bound laboratory notebook.

Evaluation:

Your grade will be based on your performance in the following:

Quizzes: Quizzes will be given during class on Tuesday or Thursday as scheduled in syllabus, and will have a time limit. If you miss the quiz, you will not have a chance to make it up. The best 6 quiz scores will be used in determining your final grade. Each quiz counts for 20 points.

Exams: There will be three exams and one final exam. You are permitted to bring a molecular model kit, the instructor must approve if it is assembled in any way. A scientific calculator that has at least log and exponential functions is required. **NO GRAPHING CALCULATORS.**

Once the exam begins you may not leave the room unless you turn in the exam. No Cell Phones during exam. Make-up exam shall be given for serious and compelling reasons only. Consult your instructor **PRIOR TO EXAM TIME** by all means. There will be 10% deduction in grades for all the make-up exams.

Final Exam: A comprehensive final exam will be given. Student who miss or fail the final exam will not receive a grade C or better.

Labs: All 10 labs count towards your grade. No make-up labs. Late labs will incur a penalty. You **MUST** wear eye protection during lab. Maintaining Lab safety is a primary concern, it is important to understand and follow the safety rules provided later in this syllabus.

Lab final Exam: There is one lab exam worth 100 points. The lab exam will be given during your regularly assigned laboratory sessions. **No early, late or make-up lab exams will be given and lab exam scores will count toward your overall course grade.**

7 Quizzes (20 pts each, 1 lowest quiz score will be dropped)	120 points
9 Lab reports (20 pts)(5 pts for prelab and 15 pts for report)	180 points
1 Lab Final	100 points
3 Exams (100 pts each, 1 lowest exam score will be dropped)	200 points
1 Final (200 pts)	200 points
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Total	800 points

Letter grades will be assigned according to the following grade scale:

- 90-100% = A
- 87-89.9% = A-
- 84-86.9% = B+
- 79-83.9% = B
- 76 -78.9% = B-
- 72-75.9%= C+
- 60-71.9% = C
- 50-59.9% = D
- Below 50% = F

Dr. Ramakrishna reserves the right to change exam dates as well as modify the grade scale at any point during the quarter.

Lab Notebooks: You are required to maintain a bound laboratory notebook. Each experimental procedure must be written in your lab notebook prior to performing the experiment. The prelab must be completed prior to coming to lab. All the observations and results must be entered immediately and directly into the lab notebook using pen. Lab final exam will be “**open-notebook**”. A well prepared notebook will be helpful during the exam.

Lab Reports: Instructions to submit lab reports will be given during the lab session. No make-up labs or late lab reports will be allowed or accepted.

Attendance: Your attendance is urged for all lectures and required for all quizzes, exams and labs. Unexcused exam, quiz and lab absences score zero. It is the responsibility of the student to contact the instructor regarding missed work. If an absence is anticipated, the student should make arrangements to complete the missed assignments prior to the absence. In an emergency, it is the student’s responsibility to contact the instructor within one class period of an exam. There are no laboratory make-up days. If you miss lecture, laboratory lecture, or a laboratory period for any reason within the first two weeks of class, you will be dropped from the course.

Academic integrity: Academic dishonesty is a serious offense. Students are also expected to abide by the Academic Integrity policy of De Anza college. Details can be found at, <http://www.deanza.edu/studenthandbook/academic-integrity.html>. Copying another student’s data, paper, exam, quiz or use of technology devices to exchange information during class time and/or testing is never tolerated and result in **dismissal** from the course with **Grade F**.

Cell Phone Policy: Use of cell phone during lecture and lab sessions are strictly prohibited. Violation of this policy will bar you from attending the classes and may result in failure in the class.

Homework : Working problems at the end of each chapter is the assured way to increase your understanding of the course material. As this is a college-level course, homework will not be collected or graded; it is entirely up to you to discipline yourself to do as many problems as may be necessary for you. The suggested problems are **not** necessarily an indicator of the types of problems that will be found on quizzes or exams. Recommended problems are posted below.

Chapters	Problems
Ch:1- Matter and Energy	1.4, 1.8, 1.12, 1.14,1.18, 1.22, 1.28, 1.34, 1.40, 1.46, 1.52, 1.58, 1.60, 1.68, 1.74, 1.76, 1.80, 1.86, 1.90, 1.96, 1.108
Ch:2- Atoms, Ions and the Periodic Table	2.2, 2.10, 2.14, 2.22, 2.24, 2.28, 2.30, 2.34, 2.38, 2.40, 2.48, 2.50, 2.54, 2.74, 2.78, 2.86, 2.92, 2.94, 2.98, 2.104, 2.106, 2.108
Ch:3-Chemical Compounds	3.2, 3.4, 3.8, 3.10, 3.12, 3.14, 3.18, 3.20, 3.22, 3.30, 3.32, 3.34, 3.36, 3.38, 3.40, 3.42, 3.44, 3.46, 3.48, 3.50, 3.54, 3.60, 3.62, 3.66, 3.68, 3.70, 3.82, 3.84, 3.86, 3.88, 3.90
Ch:4- Chemical Composition	4.4, 4.8, 4.10, 4.12, 4.16, 4.18, 4.20, 4.22, 4.24, 4.28, 4.30, 4.34, 4.36, 4.38, 4.40, 4.42, 4.44, 4.46, 4.48, 4.54, 4.56, 4.58, 4.60, 4.68, 4.70, 4.72, 4.74, 4.76, 4.78, 4.80, 4.84, 4.86, 4. 88, 4.100, 4.102, 4.104, 4.106, 4.108, 4.112, 4.114
Ch:5-Chemical Reactions and Equations	5.6, 5.8, 5.12, 5.18, 5.24, 5.28, 5.30, 5 38, 5.40, 5.42, 5.46, 5.48, 5.52, 5.56, 5.58, 5.60, 5.64, 5.70, 5.74, 5.78, 5.82, 5.88,5.92, 5.96, 5.104, 5.106, 5.110, 5.112
Ch:6- Quantities in Chemical Reactions	6.4, 6.8, 6.10, 6.12, 6.14, 6.16, 6.18, 6.20, 6.22, 6.24, 6.26, 6.28, 6.32, 6.34, 6.36, 6.38, 6.40, 6.44, 6.46, 6.48, 6.50, 6.56, 6.58, 6.60, 6.62, 6.64, 6.68, 6.72, 6.74, 6.76, 6.78, 6.84, 6.86, 6.90, 6.92, 6.94.
Ch:7- Electron Structure of the Atom	7.2, 7.8, 7.12, 7.14, 7.16, 7.18, 7.24, 7.28, 7.30, 7.32,7.36, 7.40, 7.44, 7.46, 7.48, 7.50, 7.52, 7.54, 7.62, 7.64, 7.66, 7.68, 7.72, 7.76, 7.78, 7.80, 7.82, 7.84.
Ch:8-Chemical Bonding	8.2, 8.4, 8.6, 8.8, 8.10, 8.14, 8.16, 8.20, 8.22, 8.24, 8.26, 8.30, 8.32, 8.34, 8.46, 8.48, 8.50, 8.52, 8.54, 8.56, 8.58, 8.60, 8.62, 8.64, 8.66, 8.68, 8.70, 8.86, 8.88, 8.90, 8.92, 8.94,8.100, 8.114, 8.120, 8.122, 8.134.
Ch:9-The Gaseous State	9.14, 9.16, 9.20, 9.22, 9.24, 9.26, 9.30, 9.38, 9.40, 9.42, 9.44, 9.50, 9.52, 9.58, 9.60, 9.62, 9.64, 9.66, 9.68, 9.70, 9.72, 9.86, 9.88, 9.90, 9.92, 9.94,9.100, 9.102, 9.116
Ch:10-The Liquid and Solid States	10.2, 10.6, 10.10, 10.14, 10.22, 10.34, 10.36, 10.42, 10.46, 10.48, 10.54, 10.58, 10.62, 10.68, 10.70, 10.74, 10.78, 10.82,10.84, 10.88.
Ch:11-Solutions	11.4,11.6,11.10,11.14,11.42,11.46,11.48,11.50,11.52,11.58,11.62,11.64,11.68,11.72,11.74, 11.76,11.80.
Ch:13- Acids and Bases	13.12,13.16,13.18,13.20,13.22,13.24,13.28,13.30,13.34,13.36,13.38,13.44,13.46,13.52, 13.54,13.56,13.58,13.62,13.66,13.68,13.70,13.72,13.74,13.78,13.80,13.82,13.86,13.92, 13.96,13.98,13.106,13.108,13.110,13.112.
Ch:14-Oxidation-Reduction Reactions	14.4,14.8,14.10,14.12,14.14,14.16,14.18,14.20,14.24,14.26,14.28,14.30,14.32,14.36,14.46, 14.48.

Chemical Disposal: As a concern for the environment, proper chemical disposal is essential. Students who do not comply with directed procedures may be dropped from the course for repeated offenses.

Eye protection: During performing experiments, you must wear full goggles that are sold by the De Anza Bookstore only and not safety glasses. Without them, you may not participate in lab and will receive a grade of zero for that lab.

Changes to Syllabus: This syllabus may change according to the needs of the class. Please check with the syllabus posted.

Tentative Laboratory, Lecture, and Exam Schedule

Date Tuesday	Lecture(Rm-S32) Lab-Section-01(Rm-SC2208)	Date Thursday	Lecture(Rm-S32) Lab-Section-02(Rm-SC2208)
08 Jan	Lecture :Introduction Ch.1: Matter and Energy Section-01-Lab: Check-In & Math Module	10 Jan	Lecture: Ch.1-Cont., Ch.2: Atoms, Ions and the Periodic Table Section-02-Lab: Check-In & Math Module
15 Jan	Lecture :Ch.2:Cont,Ch.3: Chemical Compounds Section 01-Lab 1 : Measurements	17 Jan	Lecture: Ch.3:cont,Ch.4 Chemical Composition Quiz-1: Ch.1 & 2 Section-02 -Lab 1 :Measurements
22 Jan	Lecture: Ch.4. Cont. Ch.5: Chemical reactions & Equations Section 01-Lab 2 : Density & Gravity	24 Jan	Lecture :Ch:5 cont, Quiz-2: Ch.3 & 4 ; Section 02-Lab 2 : Density & Gravity
29 Jan	Lecture:Ch:5 cont, Review for Exam-1, Section 01-Lab 3 : Atomic structure & Periodic Table	31 Jan	Lecture: Exam-1(Ch.1-4) Section 02-Lab 3 :Atomic structure & Periodic Table
05 Feb	Lecture :Ch.6: Quantities in Chemical reactions. Section 01-Lab-4 : Ionic Compounds	07 Feb	Lecture:Ch.6: cont, Ch.7: Electron Structure of the Atom Quiz 3:Ch. 5 & 6 Section 02-Lab-4 : Ionic Compounds
12 Feb	Lecture: Ch:7. Cont, Ch:8: Chemical Bonding. (8.1-8.3, 8.5) Section 01-Lab-5 : Covalent Compounds	14 Feb	Lecture:Ch.8: cont.: Ch:9:The Gaseous State Section 02-Lab-5 : Covalent Compounds
19 Feb	Lecture:Ch.9: Cont, Review for Exam-2 Quiz-4: Ch.7 & 8 Section 01-Lab-6 : Empirical Formulas	21 Feb	Lecture: Exam-2 (Ch.5-8) Section 02-Lab-6 : Empirical Formulas
26 Feb	Lecture: Ch:10:The liquid & Solid States, (10.1-10.3) Section 01-Lab-7: Chemical Reactions	28 Feb	Lecture:Ch.10 Cont, Section 02-Lab-7: Chemical Reactions
05 Mar	Lecture: Ch:11:Solutions , (11.1,11.4, 11.5) Quiz-5:Ch.9&10, Section 01-Lab-8: Gas Laws	07 Mar	Lecture: Ch:11:Cont. Ch:13:Acids and Bases (13.1-13.6) Section 01-Lab-8: Gas Laws
12 Mar	Lecture:Ch.13:Cont: Ch:14:Oxidation-Reduction Reactions(14.1, 14.2, 14.4) Section 01-Lab-9: Vinegar Analysis	14 Mar	Lecture: Ch:14:Cont, Quiz-6:Ch.11 & 13 Section 02-Lab-9: Vinegar Analysis
19 Mar	Lecture: Review-Exam-3; Quiz-7 (Ch.1-11,Ch.13-14) Section 01-Lab- Lab Final; Check-Out	21 Mar	Lecture: Exam-3 (Ch.9-11. Ch.13-14) Section 02- Lab - Lab Final ; Check-Out
26 Mar	Review for Final Exam (Ch.1-11, Ch.13-14)	28 Mar	Final Exam; 9:15 am -11:15 am Cumulative (Ch.1-11 & Ch.13-14)

Laboratory Safety Rules

From the American Chemical Society Safety In Academic Laboratories Guidelines, 7th Ed., the following mandatory minimum safety requirements must be followed by all students and be rigorously enforced by all Chemistry faculty:

- 1) Chemistry Department-approved safety goggles purchased from the De Anza College bookstore (NOT safety glasses) must be worn at all times once laboratory work begins, including when obtaining equipment from the stockroom or removing equipment from student drawers, and may not be removed until all laboratory work has ended and all glassware has been returned to student drawers.
- 2) Shoes that completely enclose the foot are to be worn at all times; NO sandals, open-toed, or open-topped shoes, or slippers, even with socks on, are to be worn in the lab.
- 3) Shorts, cut-offs, skirts or pants exposing skin above the ankle, and sleeveless tops may not be worn in the lab: ankle-length clothing must be worn at all times.
- 4) Hair reaching the top of the shoulders must be tied back securely.
- 5) Loose clothing must be constrained.
- 6) Wearing jewelry such as rings, bracelets, and wristwatches in the laboratory should be discouraged to prevent chemical seepage in between the jewelry and skin.
- 7) Eating, drinking, or applying cosmetics in the laboratory is forbidden at ALL times, including during lab lecture.
- 8) Use of electronic devices requiring headphones in the laboratory is prohibited at ALL times, including during lab lecture.
- 9) Students are advised to inform their instructor about any pre-existing medical conditions, such as pregnancy, epilepsy, or diabetes, that they have that might affect their performance.
- 10) Students are required to know the locations of the eyewash stations, emergency shower, and all exits.
- 11) Students may not be in the lab without an instructor being present.
- 12) Students not enrolled in the laboratory class may not be in the lab at any time after the first lab period of each quarter.
- 13) Except for soapy or clear rinse water from washing glassware, **NO CHEMICALS MAY BE Poured INTO THE SINKS**; all remaining chemicals from an experiment must be poured into the waste bottle provided.
- 14) Students are required to follow the De Anza College Code of Conduct at all times while in lab: “horseplay”, yelling, offensive language, or any behavior that could startle or frighten another student is not allowed during lab;
- 15) Strongly recommended: Wear Nitrile gloves while performing lab work; wear a chemically resistant lab coat or lab apron; wear shoes made of leather or polymeric leather substitute.

Student Learning Outcome(s):

*Assess the fundamental concepts of modern atomic and molecular theory.

*Evaluate the standard classes of chemical reactions.

*Demonstrate a fundamental understanding of mathematical concepts pertaining to chemical experimentation and calculations.