

De Anza College-Spring 2017 (4/10-6/30)

Introductory Chemistry

CHEM 10.01 and 10.02 Syllabus

Lecture: TR 10:30 AM-12:20 PM, Room SC1102

Lab 10.01: T 7:30 AM-10:20 AM, Room SC2202

Lab 10.02: R 7:30 AM-10:20 AM, Room SC2202

Lecture Instructor: Dr. Chris Deming, email: cdemo87@gmail.com

Laboratory Instructor: Dr. Hema Ramakrishna, email: ramakrishnahema@fhda.edu

Lecture Office Hours (Tentative): T 12:30 PM-1:30 PM, R 12:30 PM-1:30 PM,
Science Center, Second Floor

Prerequisites: Advisory: EWRT 211 and READ 211 (or LART 211), or ESL 272 and 273; MATH 212 or equivalent.

Course Description: An introduction to the discipline of chemistry, including chemical laboratory techniques and methods as well as a survey of important chemical principles. The course emphasizes chemistry as a subject of scientific inquiry and is designed to give the student a general appreciation for chemistry as a science.

This is a beginning level chemistry course and is aimed at students who are not majoring in science. This course will provide general familiarity with basic chemical principals as well as introductory laboratory techniques in order to bridge the gap between the accepted theories of chemistry and the laboratory processes that support these ideas. Chemistry is presented as a means for scientific exploration and inquiry while emphasizing the endless real world examples and promoting the development of an appreciation for chemistry.

Course Material:

- 1. Course Text Book: CHEMISTRY for Changing Times, Pearson Custom Library, 14e, by Hill, McCreary, and Kolb.** ISBN: 978-1-256-61558-3. Reading from this book will be assigned to prepare students for the upcoming lecture as well as to solidify the concepts presented in class. Lectures will not follow exactly with the book but will be close enough to act as a useful guide for chapter content. Homework assignments will come from the problems at the end of each chapter in this book.
- 2. Scientific calculator.** Students are encouraged to bring your calculator each day to work through examples as they are presented. Phones will not be allowed for calculations during quizzes or tests so be sure to bring a calculator those days.
- 3. Lab Text Book : Laboratory Manual Conceptual Chemistry.** Suchocki and Gibson, 4e. This lab book contains all the information for the experiments in the class

with the lab report outline at the end of each chapter. Students are required to read through the lab procedure BEFORE the lab session starts to recognize experimental hazards and become familiar with the procedures.

4. Safety Goggles. Proper eye protection is required for every lab. Without goggles, the lab cannot be performed and student receives a score of 0 for that day. Goggles must seal to the face (not safety glasses). Lab approved goggles are available at the bookstore.

Grades/Evaluations:

	Points
8 Homework Assignments (20 points each)	160
3 In-Class Quizzes (20 points each)	60
4 In-Class Exams (50 points each)	200
9 Labs (30 points each)	270
Environmental Report	60
Subjective	50
Final	200
Total	1000

Homework: For each chapter studied, a selected set of problems will be assigned. These questions are aimed to promote critical thinking, improve problem solving skills, and aid in solidifying the connection between the concepts presented and the mathematics that govern each situation. The assigned problems are listed at the end of the syllabus. The due dates are also listed on the lecture schedule. Each problem set is worth **20** points and is due at the beginning of class on the designated day. All work must be shown to receive full credit. Beyond the credit for timely completion, these assignments will provide excellent practice for quizzes, exams, and the final.

In-Class Quiz: These in-class quizzes are designed to test the understanding of concepts in between the exams. Material will be closely related to the homework for that section and are worth **20** points each. Quizzes will be held at the beginning of the class period on the designated day and will generally take 10-20 minutes. Some questions may involve calculations, so bring a calculator on quiz days. Quizzes will only be accepted during the allotted time so late arrival will receive a 0 for that quiz.

Exams: Exams are the primary tool in assessing what has been learned from lecture. These exams will take the entire class period and are worth **50** points each. Questions will consist of true/false statements, multiple choice, conceptual, and calculations. Remember to bring a calculator on these days. The lecture before each exam is partially dedicated to review exam material.

Lab Work: Each week students must prepare for and perform the designated lab safely and effectively for a total of 9 labs. Each lab is worth **30** points and grading for the lab will be based on preparation, lab safety, lab effectiveness, and a report for the lab. Students must read through the lab procedure BEFORE the lab session and present notes, facts, or any type of recognition of the experimental hazards to ensure the section on safety has been read. Each lab report is due at the beginning of the lab session in the following week and the outlines for each lab report can be found at the end of the experiment in the course lab text. Specifics for lab performance and success can be found later in this syllabus. **Lab safety sheet must be turned in by the beginning of the second lab session.**

Environmental Report: Chemistry has provided unprecedented strides in almost every field including energy, medicine, and waste cleanup. What is rarely discussed is the effect such abundant chemical research can have on the environment. In addition to a special lecture on chemistry and the environment, students are required to write a short report on an environmental concern worth **60** points. The report should be 2-3 paragraphs and should include a short summary of the issue and the effects on the environment, how chemistry is related to this issue, and, more importantly, what this issue means to you. This project is aimed to promote critical thinking about the implemented technology and should not be more than one page. This will be due 6/20 and more specifics will be addressed closer to the due date.

Subjective: These **50** points are assigned for classroom/laboratory behavior. This includes showing up to lecture and lab on time, coming to lab prepared, and staying quiet during instruction. These points are very easy to get as long as standard classroom behavior is followed. These will be assigned at the end of the quarter.

Final: The final is worth **200** points and will cover all topics discussed. All sections will be equally represented on the final with a small portion dedicated to laboratory operations and environmental issues. Review for the final will be the last lecture of class. The final date is Thursday 6/29/2017 from 9:15 AM-11:15 AM. **Bring Calculators.**

Attendance: Attendance is strongly suggested for all lectures and required for all labs. Any missed quizzes, exams, or labs will receive a score of 0 unless properly excused. It is the student's responsibility to arrange for excused absences BEFORE the date of a quiz, exam, or lab. In emergency instances, please contact as soon as possible and arrangements will be made.

Resources: Academic support can be found at the Learning Resources Division <https://www.deanza.edu/learningresources/>. Information about tutoring can be found at the Math Science and Technology Resource Center <https://www.deanza.edu/studentsuccess/mstrc/>. Additionally, you are encouraged to email me with class questions.

Academic Integrity: By enrolling in classes at De Anza College, you are agreeing to the academic integrity policy and are held to all standards. Specifics can be found at <https://www.deanza.edu/studenthandbook/academic-integrity.html>. Cheating will not be tolerated and will result in 0 for that quiz/exam or potentially removal from the class. Working

in groups for homework is encouraged but copying is not allowed. Original work must be turned in for homework credit.

Disability Service Support: De Anza is committed to providing support for students with disabilities. Please contact me as soon as possible if you require special accommodations and I will be happy to do what I can to help. For more information, visit Disability Service Support at <https://www.deanza.edu/dss/>

Grade Assignment

Grading is tentatively set as follows

Grade	Percentage
A	>90
B	80-90
C	70-80
D	60-70
F	<60

Laboratory Experiments

The laboratory portion of this course is required and aims to connect the concepts learned in class with the experiments that support these ideas. Lab sessions meet once a week for 3 hours and a total of 9 experiments will be performed throughout the quarter. Details of each lab component, including grade breakdown, and a list of safety procedures and general lab practices are given as follows.

Lab attendance is mandatory

Late arrivals to lab will not be allowed to participate in lab that day and receive a 0.

Improper safety equipment will prevent participation and result in a 0 for that day.

More than one 0 without proper excuse will result in failure of the course.

Lab Work Grade Breakdown:

	Points
Lab Safety/Preparedness	5
In Lab Performance	10
Lab Report	15
Total	30

Lab Safety/Preparedness: Maintaining safety in a laboratory is a primary concern. There are many hazards associated with chemistry labs and it is important to understand these hazards and that with proper techniques, the risk drops significantly. There are a few, very

simple steps students should take to execute safe lab techniques and gain full points for this section.

First, always wear personal protective equipment (PPE) when performing lab experiments. Such items include, but are not limited to, safety goggles, long pants, sleeved shirt, and closed toe shoes. A more detailed list containing safe lab procedures and general practices is provided later in this syllabus.

Second, read the lab procedure BEFORE coming to lab so that all hazards are known ahead of time and may be properly addressed. Notes, facts, or any recognition of the hazards given on the procedure sheet is required to ensure the section on safety has been read. Reading the procedure ahead of time and knowing what tasks are at hand will also help the experiment go smoothly.

Finally, listen carefully to the directions provided at the beginning of the lab session. Many techniques can be performed safely and easily with the proper technique but become a safety hazard when performed improperly. Only use the lab equipment as directed in class. Lab safety and preparation for each lab is worth **5** points.

Lab Performance: 10 points will be given for safe and effective execution of each assigned experiment. This includes following safe procedure, listening to directions, working as team, lab bench cleanup, and proper disposal of waste. Please do not feel intimidated in getting evaluated on lab performance. You will not be held to expert standards and following the directions indicated will almost always result in full points.

Lab Reports: A report sheet found at the end of each experiment in the lab text must be completed for each experiment. Each report is worth **15** points and is due at the BEGINNING of the FOLLOWING lab session, but students are strongly encouraged to stay for the duration of the session to finish the lab report.

NOTE. Lockers will be assigned on the first day of lab. Please make sure that every piece of equipment on the check in list is present. If not, the item may be retrieved from the stock room on the first day only. Additionally, upon completion of the course, a check out procedure is required to account for all equipment. You will be accountable for any missing or damaged equipment. Keeping clean chemical equipment, safely in the locker is a part of lab clean up and will count towards the grade.

Here is a list for lab safety and general lab practices

1. Properly prepare for each experiment by reading the procedure BEFORE class
2. Know the location of all emergency equipment such as fire extinguisher or first aid kit as well as the evacuation route and safe meeting place
3. Goggles are always required when in lab. This is for your protection. Prescription glasses do not count as safety goggles and must be worn under the goggles.
4. Long pants must be worn at all times. This is to protect you from chemical spills.
5. Closed toe shoes must be worn at all times. Again, this is to protect you against chemical spills or sharp, falling objects.
6. Sleeveless tops or tops exposing large portions of skin are not allowed

7. Long hair should be tied back and loose clothes should be fixed to prevent dipping in chemicals or catching fire if Bunsen burner is near
8. Report any injuries to the instructor immediately. It is important to get you the help you need if injured in lab, so please do not hesitate.
9. Report any large spills to the instructor immediately. Large accumulations of chemicals can cause hazards to you and those around you
- 10.No eating or drinking in lab.
- 11.Do not eat or taste any chemicals
- 12.Do not pipette liquids by mouth.
- 13.Do not smell a chemical directly. If the experiment requires you recording the smell, waft the vapor towards your nose.
- 14.Do not grab recently heated equipment because they stay hot for a while
- 15.Lab equipment is for designated experiments only. Unauthorized use of equipment will result in loss of points
- 16.Do not use an open flame near flammable materials
- 17.Use the fume hood when designated
- 18.Clean up all broken glassware immediately with a broom. Do not clean by hand.
Dispose all broke glassware in the correct container
- 19.No chemical goes down the sink except pure water. Discard chemicals in the assigned container.
- 20.Do not pipette from the stock solution bottles. Instead, bring a beaker to the stock bottle, dispense the required amount, and pipette desired amount once back at your lab bench. Remember to replace the cap on the reagent bottle.
- 21.Do not pour excess reagent back into the stock bottle. Instead, properly dispose in designated container. To avoid discarding unused chemical, try hard to estimate the amount of chemicals needed before dispensing from stock solutions.
- 22.Read all labels on stock bottles carefully and label all beakers used to dispense each reagent
- 23.Keep equipment away from the edge of the lab bench
- 24.Record all data in notebook only
- 25.Avoid heating closed containers. This will result in pressure build up a possible eruption and injuries
- 26.Clean up after yourself. This includes lab equipment, the reagent bench, your bench, the weighing stations, the floor around you, and anywhere that you may make a mess. Failure to do so will result in point loss. Continual messiness may result in loss of all points for that lab.
- 27.Try not to touch your skin/face during lab session. Given the chance that there are chemicals on your hands, spreading the coverage will only make matter worse.
- 28.Wash your hands after every lab session.
- 29.Assume a chemical or procedure is hazardous unless you know otherwise
- 30.Follow all direction by the lab instructor

Lecture Schedule

Date (Tuesday Class)	Lecture	Date (Thursday Class)	Lecture
4/11	Introduction to Lecture and Lab Chapter 1 - Chemistry Chapter 2 - The Atom	4/13	Continue Chapter 2
4/18	Homework Due Chapter 1 QUIZ 1 - Chapters 1 & 2 Chapter 3 - Atomic Structure	4/20	Homework Due Chapter 2 Continue Chapter 3
4/25	Homework Due Chapter 3 Chapter 4 - Chemical Bonds Review Chapters 1-3	4/27	EXAM 1 - Chapters 1-3
5/2	Continue Chapter 4	5/4	Continue Chapter 4
5/9	Homework Due Chapter 4 Chapter 5 - Chemical Accounting Review Chapter 4	5/11	EXAM – Chapter 4
5/16	Continue Chapter 5	5/18	Homework Due Chapter 5 QUIZ- Chapter 5 Chapter 6 - IMFs
5/23	Homework Due Chapter 6 Chapter 7 - Acids and Bases	5/25	Chapter 8 - Oxidation and Reduction Review Chapters 5- 7
5/30	Homework Due Chapter 7 EXAM Chapters 5-7	6/1	Continue Chapter 8
6/6	Homework Due Chapter 8 QUIZ - Chapter 8 Chapter 11 - Nuclear Chemistry	6/8	Continue Chapter 11
6/13	Homework Due Chapter 11 Review Chapters 8 & 11	6/15	EXAM Chapters 8 & 11
6/20	Environmental Report Due SPECIAL LECTURE - Green Chemistry and Environmental Impacts	6/22	Final Review
6/27	No Class	6/29	FINAL EXAM

FINAL EXAM DATE/TIME

Thursday June 29, 2017 9:15 AM – 11:15 AM

PLEASE NOTE. All dates and facts listed are subject to change. In the event of an important date change, I will inform in class, but please also look for updated versions of the syllabus online as the quarter progresses.

Laboratory Schedule 10.01

Date	Lab
4/11	CHECK-IN
4/18	TAKING MEASUREMENTS
4/25	% WATER IN POPCORN
5/2	ELECTRON DOT STRUCTURES
5/9	MOLECULAR SHAPES
5/16	SOLUTIONS
5/23	UPSET STOMACH
5/30	HOW MUCH FAT
6/6	ORGANIC MOLECULES
6/13	DNA CAPTURE
6/20	CHECK-OUT

Laboratory Schedule 10.02

Date	Lab
4/13	CHECK-IN
4/20	TAKING MEASUREMENTS
4/27	% WATER IN POPCORN
5/4	ELECTRON DOT STRUCTURES
5/11	MOLECULAR SHAPES
5/18	SOLUTIONS
5/25	UPSET STOMACH
6/1	HOW MUCH FAT
6/8	ORGANIC MOLECULES
6/15	DNA CAPTURE
6/22	CHECK-OUT

Tentative Homework Schedule. Problem set may be adjusted throughout the quarter. This will be announced in class. This may seem like a lot of homework, but you will find that many of these problems will be used as examples in lecture so taking good notes and paying attention in class will result in less homework time.

Chapter	Assigned Problems	Due Date
1	3, 4, 5, 8, 12, 19, 22, 24, 30, 32, 34, 36, 39, 40, 45, 48, 49, 54, 56, 58, 65, 66, 72, 73, 85	18-Apr
2	2, 4, 6, 7, 10, 13, 15, 16, 18, 20, 22, 25, 28, 29, 32, 36, 37, 38, 42, 44, 45, 52	20-Apr
3	6, 7, 8-14, 16, 18, 31, 32, 34-36, 38-44	25-Apr
4	3, 8, 10, 13, 14, 17, 20, 21, 23, 24, 26, 28, 33, 34, 36, 39, 42, 44, 48, 50, 51, 54, 56-60, 72, 78, 82, 87	9-May
5	2, 4-6, 8-10, 12, 13, 15, 19-21, 24-26, 28, 29, 31, 33, 35, 36, 40-43, 45-47, 51, 52, 56	18-May
6	1, 2, 4, 7, 8, 10, 14, 16, 19, 22, 23, 29, 36, 39, 44	23-May
7	1, 4, 7, 9, 11, 15, 17, 18, 24, 25, 31, 33, 36, 39, 40, 44-46, 51, 53	30-May
8	1, 2, 5, 6, 12, 14-16, 18, 20, 24, 33, 34, 36, 39, 43, 47, 48, 59, 61, 64, 69, 76	6-Jun
11	3, 4, 5, 9, 19, 22, 23, 26, 28, 32, 39, 51	13-Jun