

# Chemistry 10: Chemistry for the Liberal Arts Internet Spring 2020, Jan 13 start

PREREQUISITE: NONE

NUMBER OF UNITS: 3 TOTAL HOURS OF LECTURE: 54

COURSE INSTRUCTOR: Cliff Gottlieb web page <http://www.cliffschemistry.com>

Office Hours: online

## CATALOGUE COURSE DESCRIPTION:

A non-mathematical introduction to the major concepts of chemistry with attention to their relevance to practical and societal problems. This course is intended for non-science majors who wish to gain an appreciation for the application of chemistry to everyday living. The course includes such topics as nuclear energy and energy alternatives; health issues of drugs; food additives, nutrition, hormones; chemicals for household use, chemicals in the environment, and synthetics. This course may include field trips. This course will meet the general education requirement for a laboratory science if it is taken with CHEM 11. Chem 11 can be take while taking Chem 10.

**The online nature of this course offers students the flexibility in study times to meet individual needs. However, a successful student in an online situation must be motivated, organized, and a self-starter. Plan to spend at least 9 hours per week on this course. I will do everything I can to help you succeed in this course!! You just have to ask!! And always remember, No Freaking Out!!**

REQUIRED TEXTS: (The text, other materials, and free tutoring are available in the Science Learning Center, room 1626.)

Chemistry for Changing Times, 15<sup>th</sup> ed. by John Hill, et al. 9780134878102. Available at the Shasta College Bookstore or any on-line book retailer. I will also accept the 14<sup>th</sup> ed, ISBN 9780321972026 or the 13th ed. 9780321750877 Search for these online using the ISBN number and you will find them much cheaper than the Shasta College Bookstore. Be careful of E-books as they may not include the entire text. The text has 22 chapters.

I have provided numerous resources on my web sites. On the Shasta College Online course management program (Canvas) are lectures notes; practice worksheets with answers, and links to other websites will assist you in learning the subject matter of this class.

## COURSE OVERVIEW

This course will look at some of the fundamental ideas and principles of scientific thinking and chemistry. I will place an emphasis on practical applications of chemistry to everyday life. This is a college/university level course that is transferable to four-year institutions. It is not a high school course. Students who are non-science majors or who are just interested in learning about chemistry in our lives should enroll in this course. If you have any concerns about whether this course is appropriate for you, please contact me.

## STUDENT LEARNING OUTCOME:

Students in the course will be expected to interpret, analyze and/or apply supplied data and information to solve a chemical problem.

## INTERNET DELIVERY ISSUES:

The entire course is on the Internet using the Shasta College Online program called Canvas. Unless unusual situations occur, there is no face-to-face component to the course. This version of this course will be delivered over the Internet using a program called the Shasta College Online program. This delivery system allows students the freedom to set their own schedule for completing the coursework. Most documents are in Adobe Acrobat PDF format. You should download the free Acrobat Reader immediately and install it on your computer. Here is the hyperlink, [Get Acrobat Reader](#). **You must be comfortable with working on computers, downloading files, uploading files and using the internet.** You also must expect to spend the same amount of time on this course to what you would have spent on the face-to-face version of this course. **You should log onto this course everyday, check the course calendar, and make sure all of your work is up to date.** You should expect to spend at least nine hours per week on this course. Furthermore you must have sufficient self-discipline to set and adhere to your own and to the course's timelines. The Internet version of this course is equal to the face-to-face version. **DO NOT FALL BEHIND!!**

**Course schedule, timelines, and deadlines can be viewed in this syllabus and on the course calendar. Given adequate notice I will try to accommodate out of the ordinary circumstances. And No Freaking Out!!**

**TECHNICAL PROBLEMS:** If you have technical problems, **NO FREAKING OUT. Freaking out is not allowed. ☹☹.** You just need to communicate with me immediately or as soon as possible. To communicate with me use Canvas'e-mail.

## METHODS OF EVALUATION/GRADING SCALE:

Each of you has the innate ability to earn an "A". I hope that each of you will **work to achieve** an "A"!!

1. 400 points for exams. Four exams are 100 points each. There is no cumulative final.
2. 100 points for 9 chemistry content quizzes and 3 assignments. Each of these are worth 10 points. There are 12 of them. So two of them are for extra credit, your choice. The syllabus quiz counts 2 extra credit points count towards your grade. So it is possible to earn up to 122 points out of 100 points possible. (22 points extra). You must get all the questions on syllabus quiz correct to continue in the course.
3. 100 points Classroom discussions will count for 100 points. There will be 7 discussion topics each worth 15 points for which you must post your thoughts on the class discussion board and make 2 replies to your classmates' posts. Each original post is worth 11 points. Your two replies are worth 4 points total. So it is possible to earn 105 points out of 100 points. (5 points extra)
4. There are optional extra credit quizzes that involve topics that use some more involved algebra math skills. These topics are optional. You can earn up to 15 points for each of these quizzes. Any points earned on these quizzes on optional topics will be added to your total course points as extra credit. They cannot hurt your grade.
5. With reasonable notice I reserve the right to create additional graded work and adjust grade point totals accordingly

**Course grades are based on the points that you earn not by percent.** IGNORE THE PERCENT COLUMN ON CANVAS! There are 600 points in the course with the opportunity to earn at least 682. That means up to 82 extra credit points  
**Course Grades: A = 540 or more points; B = 480 – 539 points; C = 420 – 479 points; D = 360 – 419 points; F = 359 or fewer points.** THESE POINT VALUES FOR THESE GRADES ARE IN STONE AND WILL NOT BE DEVIATED EVEN BY 1 POINT!

**There is NO OTHER CREDIT other than outlined above. No make-up or LATE exams, quizzes, or homework are allowed unless you have immediate family or personal health or legal emergencies. Contact me IMMEDIATELY using the Canvas e-mail or my Shasta College e-mail if Canvas not working as soon as possible, typically the same day, to notify me of your emergency. Be prepared to send me documentation to verify your emergency. If you have health, legal, or sports non-emergencies, you must contact me at least one week before the quiz/exam to make arrangements. If technical problems occur during an exam or quiz, e-mail me immediately.**

**If you work within my parameters, I will do everything I can to accommodate your needs.** I do not drop exams, nor offer other extra credit. Keep track of your own total points and grade using Canvas. During the week before the last day to drop, I will review your class performance and grades. Otherwise do not ask me to figure out your grade. I will discuss with you at any time, your progress in the class. If you have any corrections or grade questions about any exam, quiz, or other graded assignment, you must notify me within one calendar week after the assignment is graded to the class. No adjustments in grades will be made after this time. I reserve the right to add new assignments. I also reserve the right to create grading policies to cope with atypical situations.

THE DETAILS REGARDING EVALUATION: All work is to be done by yourself and submitted individually

EXAMS will be 50 multiple choice or fill in the blank questions with each question worth 2 points. I will post a study guide that will have test type questions on it. The questions on each exam will come directly from the study guide. The study guide will not have the answers. You must find the answers in the text or in my notes. On exam days, I will make each exam available by 12 AM Pacific time and it must be completed typically by the next day by 11:55 PM, Pacific Time Zone (USA). You will have at least a two-day window in which to take the exam. The exam will be timed using Canvas. No late exams permitted except for health or legal situations or emergencies. If technical problems occur such as computer or Internet connection failure, you must e-mail me as soon as possible. I reserve the right to deliver any exam to any student in a paper-pencil format in a proctored environment.

**Exam Dates: Exam 1 Feb 21-23; Exam 2 March 14 - 16; Exam 3 April 18 - 20; Exam 4 May 10-12**

QUIZZES will be multiple choice, fill in the blank, submitting an assignment consisting of a list of at home observations, and one discussion that will involve and Internet search. Most of the quizzes will cover material directly from the worksheets which I provide online. **BE SURE TO DO AND UNDERSTAND THE WORKSHEET THAT THE QUIZ COVERS.** Be sure to use my notes to complete the worksheets. If you don't, ask me a question. Quizzes will be available at 12 AM Pacific time and it must be completed by 11:55 PM on the due day on the Pacific Time Zone (USA). Typically there will be a two day window to take a quiz. No late or make-up quizzes permitted with no exceptions other than health or legal situations or emergencies. You will be required to take a syllabus quiz to make sure that the "real" quizzes cause you no technical problems and to demonstrate that you have read this document. The syllabus quiz will count 2 points toward your grade and must be passed with 100% or you will not be allowed to continue in the class. For the syllabus quiz, you will get 4 tries. For all other quizzes you will get only 1 attempt.

**I will do everything I can to help you succeed in this course!! You just have to ask!! No Freaking Out!!**

CLASSROOM DISCUSSION FORUMS will be posted on the class calendar and will become available on the Shasta College Online discussion board about 1 week before the discussions are due. They will involve your thoughts on various more open-ended questions and topics. For topics and due dates check the schedule in this syllabus or the class calendar on Shasta College Online. For each discussion topic you are required to write one or more paragraphs to explain your views. Your writing should be college level, not text messages or tweets. I will evaluate them based on the following rubric: High quality (10 points) – discussion is accurate, organized, well thought through, and presented cogently. It includes facts to support ideas and opinions. The writing is grammatically correct. Medium quality (7 points) – discussion is insightful but is missing one item of a high quality discussion. Needs Improvement (5 points or less) – missing two or more of the characteristics of a high quality discussion. Your first discussion will not be evaluated but is required to make sure that you can post discussions on the discussion board. The topic will be to tell the class about you. Please post your discussions on the topic which you addressing. Check your grades on the Shasta College Online Canvas program to see your grades on the discussions. Grades will typically be posted within a week of the due date of the replies.

Discussion replies will also be posted on the discussion board and must meet the deadline posted on the calendar. You will need to make a brief response of at least one or two sentences to two other posted discussions. They will be graded as satisfactory (5 points) or unsatisfactory (0 points). Satisfactory replies will show that you have read the original discussion and will comment directly on items in the original discussion. Please e-mail me if you have any concerns about the way your discussions have been evaluated.

There will also be other discussion boards available to you throughout the class. There will be one for each quiz where you can interact with your classmates or ask me questions. One is for general discussions between you and your classmates. Another discussion board will be dedicated to general questions that you might have that you would like me to address.

Length of discussion is not the most important factor in determining quality. But a high quality discussion must be at least a 4-sentence paragraph. **ETIQUETTE IS IMPORTANT. RUDENESS, BIGOTRY, AND PERSONAL ATTACKS WILL NOT BE TOLERATED.** Any such displays will cause you to be dropped from the class at my discretion. Disagreement on issues is fine and I encourage it, but disagree with RESPECT FOR OTHERS' OPINIONS!. Furthermore to make on-line discussions more “human” you should use emojis to show your feelings. ☺

OPTIONAL QUIZZES will follow the same procedure as regular quizzes. They count as extra credit only and cannot hurt your grade. They are algebra based and you will need a scientific calculator to take them. More information is on Canvas.

CHEATING is the unauthorized giving or getting of answers to quizzes or exams or having someone else take exams, take quizzes or write discussions for you. All work is to be done individually. It is not fair to you, your classmates, or to me. In life all you really own is your personal integrity. Please for your own peace of mind, do not throw away your integrity for a grade in a course. That would be pathetic. DON'T DO IT!! . If you cheat, you will receive a 0 for the work involved and a penalty of a 150-point deduction from your final course grade. All work is to be completed by you individually. No copying or group work unless explicitly stated. **BY ENROLLING IN THIS CLASS, YOU AGREE NOT TO CHEAT BY OATH ON YOUR RELIGIOUS, SPIRITUAL, OR PHILOSOPHICAL BELIEFS !**

ERRORS ,OMISSIONS, or CORRECTIONS on all graded exams, quizzes, and discussions must be submitted to me via e-mail **NO LATER THAN ONE WEEK AFTER THE DUE DATE.** You can see the correct answers to any exam or quiz by clicking on any exam/quiz that has been graded. Exams and quizzes will be graded by the day after the availability period ends.

### MY RESPONSIBILITIES

I will provide you with interesting information to you and be available to answer your questions. I will help you hone your understanding of how the world works from a chemical perspective. I am online regularly on Mondays through Fridays and check the class regularly. On these days you will receive a reply usually within 24 hours. After Friday about noon through Sunday night, I may be online at various times, so I may not respond to communications until Sunday night or Monday morning. **Bottom line: I will help you to achieve the best grade that you chose to achieve.** Finally if something goes wrong,

**NO FREAKING OUT!!!** Stay calm and just send me the details and we will figure things out.

### YOUR ROLE

**STAY ON TOP OF THE CLASS!** You must read the book, read the notes, complete assignments, and participate in the class discussions. Log onto the class EVERYDAY and **check the calendar!** Click on calendar dates for more information. You need to be self-motivated and disciplined to work on your own to complete assignments. You need to work with your classmates on-line to facilitate your learning by using the discussion board and the chat rooms in Shasta College Online. Studies show that students who study in groups typically perform better than students who do not work in groups.

**I will do everything I can to help you succeed in this course!! You just have to ask!! No Freaking Out!!**

ATTENDANCE: If you do not log onto the Shasta College Online page for 5 consecutive school days without notifying me, I reserve the right to make the course non-accessible to you. I DO NOT FORMALLY DROP STUDENTS FROM THE CLASS. IN ALL CASES YOU MUST DROP THE CLASS YOURSELF THROUGH THE REGISTRAR'S OFFICE!!

**IMPORTANT!!! USING THE SHASTA COLLEGE ONLINE PROGRAM (Canvas):** pay close attention!!!

Learn how to use the Shasta College Online program. Read the Canvas guide under the help link. Click on everything to see what it does, you cannot hurt the program.

## **Overview of Course Organization on the Shasta College Online program**

**I organize the course using Modules**, not by weeks. The following are modules in the course:

**Cliff's notes:** Here are my course notes in PDF format. You will need to download Adobe Acrobat reader. It is free. There are links on my various homepages. I do not provide notes for all the chapters. The later chapters are very complete and well written. I have provided notes for many of the more "nitty-gritty" chemistry in the early chapters. PLEASE USE THESE! I have omitted much material from the early chapters and have included bits and pieces of information not in the text. You will save yourself time and grief if you use my notes and the text being careful to omit material that I have noted on the schedule and have not included in my notes. I have removed most of the gnarly math and made them part of optional extra credit quizzes

**Exam study guides:** These contain about 200 questions for each exam. You have to find the answers in my notes or in the text. Each exam will have 50 questions directly off the study guide. Some answers are directly in my notes or the text. Others have to be figured out using the principles that are covered. If you have problems finding the answers, you can ask me. I will not give you the answer, but I will point you in the right direction. Do not wait until the day before the exam to work on the study guides. That is a recipe for failure. ☹

**Worksheets and answer sheets:** I have provided practice worksheets and answer sheets to help you practice and learn some of the nuts and bolts of chemistry. Each worksheet covers a set of principles that I have covered in my notes. About half of the quiz questions come straight off these sheets. The remainder covers the same exact principles. You do not have to hand them in, they are just for practice.

**Quizzes/assignments:** Click on the quiz that is available to take it. Once you open a quiz, you must finish it at that time. For each question you must save your answer and then when finished you must hit submit to submit the quiz. One day after the quiz is over; you may view your corrected submission, by clicking on the quiz again and then clicking on submission. There is a two day window to take quizzes. For assignments and discussion, follow the directions EXACTLY. There is a window of a week or more to complete these. Finally there are 3 optional extra credit quizzes that involve somewhat involved mathematical calculations. Your grade is based on total earned points, so taking these cannot hurt your grade. There are notes covering the material for these quizzes and they have an extended window to take them.

**Graded discussions:** Follow the directions for each discussion. You are to make an initial post and then later on reply to two or more of your classmates' posts.

**100 point exams:** Click on the exam that is available to take it. Once you open an exam, you must finish it at that time. For each question you must save your answer and then when finished you must hit submit to submit the exam. One day after the exam is over; you may view your corrected submission, by clicking on the exam again and then clicking on submission. There is a two or three day window to take exams.

**CLASS COMMUNICATIONS:** Use the Shasta College Online Canvas program for class communication. One discussion board will be for general course questions use the "Ask Cliff questions here" discussion board so everyone can benefit. Most course communication are made using the discussion boards or Canvas mail, unless there is a problem or emergency. The discussion forums are public. If there is a personal issue or emergency, send me an e-mail using Canvas. Do not use my general e-mail for non-emergency situations. **!!!IMPORTANT!!!! MAKE SURE YOUR CURRENT E-MAIL ADDRESS IS ON FILE AT MY SHASTA.** Classmates can communicate with each other by class discussion board.

**IMPORTANT!!!!** Using Canvas e-mail: **USE THE INBOX LINK TO SEND ME E-MAIL!!!** Here is how. After you click on the inbox, at the top middle of the page you will see a icon with a sheet of paper. Click on it and choose Chem 10. At the far right of the "To:" Box you will see a person icon. Click it and choose your recipient. Type the subject, your message and hit send. NOTE: The help link also has a way to send an e-mail to your instructor. PLEASE DON'T USE THE HELP LINK TO SEND E-MAIL.

**I will do everything I can to help you succeed in this course!! You just have to ask!! No Freaking Out!!**

**OTHER RESOURCES:** Science Learning Center. It has tutors and other resources available if you are on campus

Academic accommodations imposed by a disability: Academic adjustments due to a disability or serious medical condition: Students should contact the office of Partners in Access to College Education (PACE) for authorization of academic adjustments (accommodations) for this course. The office is located in room 2006 (242-7790). Students will need to provide documentation that

verifies the condition and the type of limitations that may result. The staff in PACE have been designated with the authority to 1) evaluate that documentation, 2) determine which academic adjustments are appropriate to this course, and 3) facilitate the provision of approved academic adjustments. Students will submit notices directly to the course instructor regarding specific academic adjustments that are authorized for this class.. [www.shastacollege.edu/student-services/dsps](http://www.shastacollege.edu/student-services/dsps)

**NON-DISCRIMINATION STATEMENT:** The Shasta-Tehama Trinity Joint Community College District (“Shasta College”), in accordance with applicable Federal and State Law, does not discriminate on the basis of race, color, national origin, sex, religious preference, age, disability (physical and mental), pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), gender identity, sexual orientation, genetics, military or veteran status or any other characteristic protected by applicable law in admission and access to, or treatment in employment, educational programs or activities at any of its campuses. Shasta College also prohibits harassment on any of these bases, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. Inquiries regarding equal opportunity and non-discrimination may be directed to:

Greg Smith, Associate Vice President of Human Resources, (530) 242-7649, [gsmith@shastacollege.edu](mailto:gsmith@shastacollege.edu)

Sandra Hamilton Slane, Associate Dean of Students, (530) 242-7799, [sslane@shastacollege.edu](mailto:sslane@shastacollege.edu)

**QUESTIONS: If you have questions, please ask me. I am here to help you. Remember NO FREAKING OUT!! ☺**

**COURSE SCHEDULE**, brief version.

Week starting	Chapters	Week starting	Chapters
1/13	1 & 2	3/16	12
1/21	3 & 4	3/23	Exam 2 & 13
1/27	4	3/30	14 & 15
2/3	4	4/6	spring break
2/10	5	4/13	16 & 17
2/17	6 & Exam 1	4/20	Exam 3 & 18
2/24	7 & 8	4/27	19
3/2	9 & 10 & 11	5/4	20 & 21
3/9	11	5/11	21 & 22 Exam 4

**Tentative Daily Schedule** With reasonable notice this schedule may be changed at the instructor's discretion.

Please note that the dates are day/month/year. Print this daily schedule and be sure to follow it!

13/1/2020, Practice Discussion Post Introduce yourself,

13/1/2020, Start Chapt 1 text & notes,

13/1/2020, Take syllabus quiz Click on the quiz icon or on the word quizzes on the course menu to the left. Then click on the practice syllabus quiz. Take it until you get 100%. You get four tries. This is the only quiz that you will get to take more than once.

14/1/2020, Start discussion 1. First post due 1-19. Two replies to classmates due 1-21,

14/1/2020, Start element worksheet,

16/1/2020, Syllabus quiz due,

16/1/2020, Start Chapt 2 text & be sure to use my simplified notes,

17/1/2020, Practice Discussion-Introduction due,

17/1/2020, Quiz 1 on first 30 elements I will give you 5 names and you give symbol and then I give you 5 symbols and you give me names. Spelling counts, Due 1/18,

18/1/2020, Quiz 1 due,

18/1/2020, Discussion 1 first post due,

18/1/2020, Start Chapt 3 text & notes,

21/1/2020, Discussion 1 replies due,

21/1/2020, Quiz 2 available. Covers isotope worksheet. Due 1/22,

26/1/2020, Quiz 3 available. Covers atomic and electron structure worksheet. Due 1/27,

26/1/2020, Start Chapt 4 text & notes. Omit section 4.11. Be sure to follow my notes especially sections 4.10 and 4.12,

30/1/2020, Quiz 4 available. Covers periodic table worksheet. Due 2/1,

4/2/2020, Quiz 5 available. Covers ion worksheet. Due 2/5,

6/2/2020, Quiz 6 available. Covers ionic compound worksheet. Due 2/8,

10/2/2020, Quiz 7 available. Covers Dot Structure worksheet. Due 2/12,

12/2/2020, Start Chapt 5 Omit sections 5.2 – 5.4 and molarity in section 5.5. This material will be on the optional extra credit quizzes.

For all other sections, follow my notes,

14/2/2020, Lincoln Day Holiday,

17/2/2020, Washington Day Holiday,

18/2/2020, Quiz 8 available. Covers balancing equations worksheet. Due 2/19,

18/2/2020, Start Chapt 6 text & notes. Omit molar volume and entire section 6.7. Be sure to follow my notes,

19/2/2020, Quiz 8 due,

21/2/2020, Exam 1 available and covers chapters 1- 6. 50 questions from the study guide. You can use the class periodic table and ion chart only. You have one try and 60 minutes. Good thinking. Due 2/23,  
23/2/2020, Exam 1 due and must be submitted by 11:55 PM,  
24/2/2020, Start Chapt 7 text and notes No pH calculations and follow my notes,  
24/2/2020, Start on Assignments 1, 2 & 3 due 4/26. Assignment 1 is a list of inorganic compounds from reading ingredient (not nutritional!) labels from common household products. Assignment 2 is a list of organic compounds classified by functional group by reading ingredient (not nutritional!) labels from common household products. Assignment 3 is a list of recycling codes and polymer names and structures from plastic materials in your house,  
25/2/2020, Start Discussion 2. First post due 2/29. Two replies to classmates due 3/3  
26/2/2020, Optional quiz 1 & 2 available. Due 4/26. Optional quiz 1 is on converting grams and number of atoms to moles and vice versa and simple mole to mole stoichiometry. Optional quiz 2 is on mole to gram and gram to gram stoichiometry. You allowed your periodic table and a scientific calculator only. These are extra credit. They cannot hurt your grade; they only add to your total points,  
26/2/2020, Start Chapt 8 text and notes,  
29/2/2020, Discussion 2 first post due,  
29/2/2020, Start Chapt 9 text and notes,  
3/3/2020, Discussion 2 Two replies to classmates due.  
4/3/2020, Start Chapt 10 text and notes,  
8/3/2020, Start Chapt 11 text and notes,  
10/3/2020, Quiz 9 available. Covers nuclear decay worksheet. Due 3/11,  
11/3/2020, Start Chapt 12 text,  
14/3/2020, Exam 2 available and covers chapters 7 – 12. Due 3/16,  
16/3/2020, Exam 2 due,  
17/3/2020, Start Discussion 3. First post due 3/22. Two replies due 3/25,  
17/3/2020, Start Chapt 13 text,  
18/3/2020, Optional quiz 3 available, due 4/26 This quiz covers calculating pH from molarity and molarity from pH. It also covers calculations involving the ideal gas law ( $PV=nRT$ ). You are allowed your periodic table and calculator only. These are pure extra credit. They cannot hurt your grade; they only add to your total points,  
22/3/2020, Start Chapt 14 text,  
22/3/2020, Discussion 3 First post due,  
25/3/2020, Start Chapt 15,  
25/3/2020, Discussion 3 Two replies to classmates due,  
27/3/2020, Start Discussion 4. First post due 3/31. Two replies due 4/3,  
31/3/2020, Start Chapter 16,  
31/3/2020, Discussion 4 first post due,  
3/4/2020, Discussion 4 Two replies to classmates due,  
6/4/2020 Spring Break through 4/10,  
11/4/2020, Start discussion 5. First post due 4/15. Two replies due 4/18,  
12/4/2020, Start Chapter 17,  
15/4/2020, Discussion 5 first post due,  
18/4/2020, Discussion 5 Two replies to classmates due,  
18/4/2020, Exam 3 available Covers chapters 13-17. Due 4/20,  
20/4/2020, Exam 3 due,  
21/4/2020, Start Chapt 18,  
24/4/2020, Start Chapt 19,  
26/4/2020, Assignments 1, 2 and 3 due,  
26/4/2020, Optional quizzes 1, 2 and 3 due  
28/4/2020, Start chapt 20,  
28/4/2020, Start discussion 6: First post due 5/2. Two replies due 5/4,  
2/5/2020, Start Chapt 21,  
2/5/2020, Discussion 6 first post due,  
4/5/2020, Discussion 6 Two replies due,  
5/5/2020, Start discussion 7. First post due 5/8. Two replies due 5/10,  
6/5/2020, Start Chapt 22,  
8/5/2020, Discussion 7 first post due,  
10/5/2020, Discussion 7 Two replies due,  
10/5/2020, Exam 4 available. Covers chapters 18 - 22,  
12/5/2020, Exam 4 due,  
13/5/2020, You're done :) Happy Summer and Life!!,

### COURSE OBJECTIVES:

1. Describe the processes of science and chemistry.
2. With examples, explain how scientific laws and experimentation are used to understand the way matter functions.

3. Identify the states of matter.
4. Identify physical changes, chemical changes, and nuclear changes.
5. Describe the structure of the atom.
6. Define element, atom, compound, and molecule.
7. Give name and symbol for the first 30 elements.
8. Describe the electromagnetic spectrum
9. Describe the processes occurring in emission spectra and absorption spectra.
10. Write chemical formulas from names and names from chemical formulas.
11. From the chemical name and /or formula, distinguish between inorganic, organic and biological chemicals and their properties such as electrolyte and non-electrolyte.
12. Draw Lewis dot structures for simple molecules
13. Define the types of radioactivity and their properties.
14. Contrast the differences between nuclear fusion and fission.
15. Describe radioactive dating and medical uses of radioactivity
16. Describe the challenges present in using nuclear fission to produce electricity.
17. Write and balance chemical equations to describe chemical reactions.
18. Describe distillation and processing of crude oil.
19. Describe the chemistry of gasoline and gasoline combustion
20. Identify organic compounds by functional group
21. Describe the chemistry of the greenhouse effect.
22. Define acids, bases and the pH scale.
23. Use different methods to measure pH.
24. Recognize acids and bases common in everyday life
25. Define and recognize oxidation-reduction reactions
26. Describe how different batteries work
27. Describe and apply relationships between P,V,T, density, and the number of molecules of a gas.
28. Describe and differentiate the structure and function of soaps and detergents.
29. Describe how soaps and detergents clean and the effect of hard water.
30. Describe the types of land, water, and air pollution.
31. Identify fats and oils, carbohydrates, and proteins based on chemical structure and function.
32. Define calorie, kilocalorie, Calorie, and joule.
33. Define the metabolic energy equations and know the energy content of fats and oils, carbohydrates, and proteins.
34. Define saturated and unsaturated fats, cis and trans fats, in what they are found, their uses and health impacts.
35. Describe chirality and how it relates to carbohydrates and proteins.
36. Recognize the structure of glucose, cellobiose, galactose, fructose, sucrose, lactose, cellulose and starch'
37. Recognize the importance of the proper enzymes for digestion.
38. Define fiber.
39. Recognize the general structure of amino acids and the primary structure of proteins.
40. Name the essential amino acids and how we get them in our diet.
41. Recognize hydrolysis reactions of carbohydrates and proteins.
42. Define vitamins and minerals.
43. Differentiate between natural, synthetic, and organic as these relate to foods.
44. Define food additives and recognize them in the foods that you eat.
45. Define poison, toxin, LD50, carcinogen, mutagen, risk, and safety.
46. Describe the agencies and laws that regulate safety.
47. Describe the relative safety of food additives that you eat.
48. Define monomer, polymer, and plastic.
49. Use the recycling codes to identify polymers and their structures.
50. Name a variety of natural and synthetic polymers.
51. Identify and contrast the properties of synthetic polymers, such as nylon, and biological polymers, such as carbohydrates.
52. Describe the chemistry of various personal hygiene products.
53. Describe the process of tanning, tan protection, and SPF.
54. Describe how various pain relievers work.
55. Recognize similarities of structures in various legal and illegal drugs.
56. Define alkaloids, opiates, and endorphins.
57. Compare the risks and benefits to society and the individual of chemicals in everyday life and industry, such as carcinogens, mutagens, hazardous waste and air and water pollution.
58. Compare the risks and benefits of chemicals in the food supply. Such as food additives, growth enhancers and pesticides.
59. Compare the risks and benefits of a variety of drugs, hormones, cosmetics and nutritional chemicals and how the body utilizes them.
60. Compare the risks and benefits to society and the individual of reproductive technology.
61. Explore the ethical issues of a technological society and its effect on the global environment.
62. Compare the risks and benefits to society of a variety of energy sources such as solar energy, electrical energy, fossil fuels and nuclear energy.
63. Evaluate scientific and technological advances from the viewpoint of benefits and risks.

**SCIENCE LEARNING CENTER**  
Redding Campus, Life Science Building - 1600  
Room 1626 530.242.2325  
Margaret Savage, SLC Coordinator  
[www.shastacollege.edu/ScienceLearningCenter](http://www.shastacollege.edu/ScienceLearningCenter)

The Science Learning Center provides a supportive learning environment where students can realize their educational goals. The Science Learning Center offers a comfortable study environment where students can study individually or in small groups. In addition, free tutoring and a variety of other resources are available to assist students enrolled in science courses. Resources are available for use in the Science Learning Center. A drivers license or Shasta College ID card is required to check-out most resources.

**Free Tutoring:** Free Tutoring is offered by students who have successfully completed the courses they tutor with a "B" or better grade. In addition to clarifying any confusing concepts, tutors can recommend good study techniques and organizational skills to help you maximize your study time. A tutoring schedule is posted in the Science Learning Center.

**Additional Resources:**

- **Text books:** Current text books, as well as solution manuals are available for most courses. In addition, various references books are available.
- **Calculators:** Basic scientific calculators and graphing calculators are available for use.
- **Microscopes and slides:** Microscopes and slides are available for reviewing some lab material.
- **CD's/DVD's:** CD's/DVD's are available on various science topics.
- **Computers:** Four internet connected computers with Microsoft Office suite installed are available for use. In addition, two laptop computers are available for in room use. Printing is available for 10 cents/page.
- **Copy Machine:** A copy machine is available in the Science Learning Center. Copies are 10 cents/page.
- **Office Supplies:** Various office supplies and office equipment are available for use (paper cutter, staplers, scissors, tape, hole puncher, markers, colored pencils, etc.).
- **Study Room:** A small study room is available for quite study.

The Science Learning Center is a friendly, helpful, encouraging environment, which could become your home away from home. Stop by and check out the Science Learning Center.

**ADDING A CLASS**

Students may add a full-term class through the fourth week of the term.\* After the first two class meetings, approval of the instructor is required to add the class, which includes both the signature of the instructor and the first date of attendance. **IT IS THE STUDENT'S RESPONSIBILITY** to pick up the form from the Admissions and Records Office and take it to the instructor for approval. The student must then return the form to the Admissions and Records Office or Extended Education Center for processing before the add is finalized.

**DROPPING A CLASS WITHOUT RECORD**

Students may drop a class, and have no notation appear on their transcripts, through the fourth week\* or 30% of the term for classes less than a semester in length. **IT IS THE STUDENT'S RESPONSIBILITY TO DROP CLASS (ES)**. The necessary forms are available from Admissions and Records, Extended Education Centers, or by mail. If a student intends to drop a class and stops attending but fails to file the necessary forms, a failing letter grade may be assigned by the instructor.

**WITHDRAWING FROM A CLASS WITH A "W" GRADE**

Students may withdraw from a class after the official "drop" date and up through the fourteenth week or 75% of the term for classes less than a semester in length. The notation "W's" will appear on the student's transcript and will not be used in calculations of grade point average. Excessive "W" shall, however, be used as factors in probation and dismissal procedures. **IT IS THE STUDENT'S RESPONSIBILITY TO OBTAIN FORMS AND SUBMIT THE NECESSARY PAPERWORK TO WITHDRAW FROM A CLASS**. Forms are available from Admissions and Records, Extended Education Centers, or by mail. Students who have not dropped or withdrawn from a class before the end of the fourteenth week or 75% of the term will be assigned a course grade.

**ATTENDANCE**

Students are expected to attend all class meetings. A student who fails to attend the first meeting of a course without notifying the instructor may be dropped from the class. In addition, an instructor may drop a student during the first 30% of the term for excessive absences. Nevertheless, **IT IS ALWAYS THE STUDENT'S RESPONSIBILITY TO OFFICIALLY DROP OR WITHDRAW** from the class. Students who fail to file the necessary forms, even though they stop attending class, will be assigned a course grade.