CHEM 10 CHEMISTRY FOR THE LIBERAL ARTS Spring 2019

PREREQUISITE: NONE NUMBER OF UNITS: 3 TOTAL HOURS OF LECTURE: 54

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

Office Hours: M 10:30 - 11:00AM; T 11:00AM – 2:00 PM; W 9:30 – 11:00 AM and by appointment in 1412. **Please come and visit**; lots of good stuff happens.

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.

GOVERNING PRINCIPLE: I TEACH STUDENTS FIRST with my vehicle being chemistry. I use a variety of techniques to provide the environment to help you learn about the information, thought processes, and methodologies used in all sciences, especially chemistry, which will allow you to succeed in this class and future classes. I look at higher education as something more than just asking you to regurgitate facts. I teach students as I do professionals in the private sector. I will illustrate processes of the mind emphasizing thinking and Life Long Learning. I will bring in current events and address relevant issues not in the text. I will show you how to find information on the Internet and how to discriminate the reliability of internet sites. I expect students to pay attention and ask thoughtful questions. I expect you to read the text and **especially my notes** online and do practice problems regularly. **YOU** must **WORK** for your **SUCCESS**. **Practical applications will be emphasized!!! Let's LEARN and have some FUN!!!!! . I will do everything I can to help you succeed in this course!! You just have to ask!! And always remember, NO FREAKING OUT!!**

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.

REQUIRED TEXTS: (The text, other materials, and free tutoring are available in the Science Learning Center, room 1626.)
Chemistry for Changing Times, 14th ed. by John Hill, et al. 9780321972026. Available at the Shasta College Bookstore or any on-line book retailer. I will also accept the 13th ed. 9780321750877 or 12th ed. ISBN 9780136054498. Search for these online using the ISBN number and you will find them much cheaper than the Shasta College Bookstore. The 12 edition will be very cheap. Be careful of E-books as they may not include the entire text. The text has 22 chapters.

CLASSROOM PROCEDURES
You are expected to attend lecture. If you miss 8 lectures you will be dropped from the class unless prior arrangements have been made or you have a unique situation. Come prepared to ask questions and otherwise participate in class. Periodically, assignments will be collected, quizzes given, and videos evaluated. You cannot make up quizzes. You will also be using the Shasta College Online program called Canvas to access required materials prior to lecture and complete the 3 assignments and the discussions.

EVALUATION/GRADING SCALE: Each of you has the innate ability to earn an "A". I hope that 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 using the online Canvas program will count for 100 points. There will be 7 discussion topics on 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. One set of two replies is extra credit. So it is possible to earn 105 points out of 100 points.
4. There are three 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. Classroom attendance: Attendance counts toward your grade. You start with +10 for attendance. For each absence I deduct 2 points from your attendance grade. WARNING: After 5 absences, your attendance grade becomes a negative number. For your attendance grade excused or unexcused absences are treated equally. It is your responsibility to sign the roll sheet in class for the appropriate day. No late corrections!
6. There may be other required or optional assignments or in class questions worth up to 100 points each.

Course grades are based on the points that you earn not by percent.

Course grades are based on the points that you earn from the evaluations outlined in items 1-5in the above chart. There are 600 points in the course with the opportunity to earn up to 682.

Total course points: A = 540 or more; B = 480 – 539 points; C = 420 – 479 points; D = 360 – 419 points; F = 359 or fewer point. THESE POINT VALUES FOR THESE GRADES ARE IN STONE AND WILL NOT BE DEVIATED EVEN BY ONE 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 online program's e-mail or office phone at 530-242-2323 as soon as possible, typically the same day, to notify me of your emergency. Do not call me at home!! Be prepared to provide documentation to verify your emergency**. If you have health, legal, or sports non-emergencies, you <u>may</u> be able to make arrangements to take an exam, quiz or submit homework early. You must contact me at least one week before the quiz/exam to make arrangements.**

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 all graded work!!** Keep track of your own total points. 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.

Here is the bottom line: COMMUNICATE with me BEFORE the FACT and I will work with you to make accommodations. After the fact makes things impossible.

<u>CLASSROOM BEHAVIOR/ETIQUETTE</u>: Come to class on time. In class **do not socialize, talk, or engage in any behavior that is unrelated to or distracting from the class**. If you must leave class early, notify me at the beginning of class, sit near the door, and exit quietly. **Turn off your cell phones and computers, NO EXCEPTIONS!** If there are reasons you need your cell phone, please see me before class. This is a college classroom and you are expected to behave like adults who wish to learn. You will be **warned one time** regarding any inappropriate behavior. Upon any further inappropriate behavior, I will deduct a 20 point fine from your final grade which increases to a 100 point fine for subsequent offenses. You may not record or video any part of the class.

<u>QUIZZES</u> 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 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 online 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.

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

<u>CLASSROOM DISCUSSION FORUMS</u> 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 two other discussion boards available to you throughout the class. One is for general discussions between you and your classmates. Another discussion board will be dedicated to 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.

ACADEMIC HONESTY: DON'T CHEAT! I will not tolerate cheating which I define to include the one who knowingly gives as well as the one who receives. It also includes "signing" the roll sheet for someone else, and copying other's work. The penalty for the first offense is a zero on the work involved, a 50 point fine that is deducted from your grade and being reported to the Vice-President of Student Services. For the second offense, the fine increases to 100 points. If you have concerns regarding academic honesty, or to report cheating, please see me. All work is to be completed individually unless explicitly stated otherwise. Finally, you probably are aware that only you can get your education--no professor can give you an education. **You are responsible for yourself.** I am responsible to help you help yourself. Your success in this class is a reflection of your effort.

CLASS COMMUNICATIONS: USE the e-mail function of Shasta College Online Program called **Canvas** to communicate personally with me. For general class communications, you can use the Canvas discussion board, "ask Cliff questions here". You can also contact me by phone at my office. Classmates will communicate with each other by Canvas e-mail or class discussion board. In case of emergency, let me know using Canvas e-mail immediately or you can call me at my office (242-2323), Do not use my general e-mail @shastacollege.edu! **IMPORTANT!!!!** Using Canvas e-mail: USE THE INBOX LINK TO SEND ME E-MAIL!!! Here is how. Click on the inbox, at the top middle of the page you will see an icon with a on a sheet of paper. Click on it and choose Chem 2A. At the far right of the "To:" Box you will see a person icon. Click it and choose your recipient then type away. 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 help you in any way that I can. Please communicate with me any issue or situation no matter how small so I may help you! Communicate early and often. And one more thing: 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/studentservices/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
Sandra Hamilton Slane, Associate Dean of Students, (530) 242-7799, 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
1/22	1 & 2	3/25	12
1/28	3 & 4	4/1	Exam 2 (3-26) & 13
2/4	4	4/8	14 & 15
2/11	4	4/15	spring break
2/19	5	4/22	16 & 17
2/25	6 & Exam 1 (2-21)	4/29	Exam 3 (4-23) & 18
3/4	7 & 8	5/6	19 & 20
3/11	9 &10	5/13	20 & 21
3/18	10 & 11	5/20	21 & 22 Exam 4

Grade Recorder

Quiz	Score	Quiz	Score	Quiz	Score	Exam	Score
1		5		9		I	
2		6		Assignment 1		II	
3		7		Assignment 2		III	
4		8		Assignment 3		IV	
Discussion 1		Discussion 2		Discussion 3		Discussion 4	
Discussion 5		Discussion 6		Discussion 7		Total Points	

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

Life Science Building – 1600 Room 1626 530-242-2325

www.shastacollege.edu/ScienceLearningCenter

Margaret Savage, SLC Coordinator

The Science Learning Center offers a comfortable study environment and a variety of resources to assist students in any of the Science classes. There are computer programs that cover specific topics, old tests, Text books for most courses and the Solution Manuals that go with them. Microscopes and slides are available for reviewing some labs and FREE TUTORING.

FREE TUTORING is done by students who have successfully completed the course; often with the same instructor Tutors must have a "B" or better in the courses they tutor. They can help you initiate good study habits and organizational skills to maximize your study time. They can also help to clarify any confusing concepts. When there is interest, we run study groups that are led by tutors.

OTHER RESOURCES AVAILABLE

- **Copy Machine** A copy machine is available in the computer area for .10 per copy.
- **Office Supplies** For your use, we have a paper cutter, stapler, scissors, tape and colored pencils .
- **Calculators** We have both basic scientific and graphing calculators. They can be checked out for use in the center and for test-taking. We hold your driver's license.
- **Computers** We have four internet connected computers with Microsoft Office suite installed. Printing is available off the computer for $0.10 a page. We also have 2 Laptops to use in the center.

STUDYING IN THE SLC: There is room available for students to study alone or in groups. We have one small room where students can isolate to minimize distractions. You are allowed to eat in the SLC.

The **SCIENCE LEARING CENTER** is a friendly, helpful, encouraging environment, which could become your home away from home. Come in and check it out.

OPEN: MON. & WED. 7:30 AM – 6 PM; TUES. & THURS. 7:30 AM – 4 PM; FRI. 7:30 AM – 3 PM

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