

CHEMISTRY 110 - COLLEGE CHEMISTRY I
CHM 110

Course Syllabus
Fall 2013
Florence-Darlington Technical College
Department of Natural Sciences

Information at-a-glance:

Course title:	CHM 110, College Chemistry I
Instructor:	Charles Taylor
Office:	5416-G
Phone number:	661-8093
E-mail:	charles.taylor@fdtc.edu
Course prerequisites:	MAT 102 (High-school level algebra)
Web site:	http://scienceattech.com

Detailed contact information for Mr. Taylor is on the course web site:

http://scienceattech.com/?page_id=282

Required textbooks:

1. Ebbing, Darrell D; General Chemistry, Houghton Mifflin Co. (**Tenth Edition**) ISBN 978-1-111-58087-2
2. Wentworth, R.A.D; Experiments in General Chemistry, Houghton Mifflin Co. (**Tenth Edition**) ISBN 978-1-111-98942-2

Optional textbook:

- General Chemistry Student Solutions Manual Tenth edition. (*You don't have to buy this book, but it may help you solve problems. It provides full solutions to the odd-numbered problems in the book. The textbook provides only answers to these same problems in the back*)

Other required materials:

A *scientific* calculator is required. A TI-83 or TI-84 is recommended. However, if you do not currently have a scientific calculator and are unable to get a TI-83 or TI-84, there are simple models like the Texas Instruments TI-25X and CASIO fx-300es available at area retailers for under \$20 that will work for CHM 110. If you aren't sure whether you have the right calculator for the course, *please ask*.

You must also have access to a computer which can both access the Internet and print. You will be required to download and print (at minimum) certain laboratory handouts. If you do not have a printer at home, you may print in the school's computer labs or at the library for a small cost.

Web site:

Helpful material for this course will be posted on the course web site, <http://scienceattech.com>. Visit the web site *at least* once after each class period.

Announcements, course notes from each lecture, study guides, problem solutions, homework, and other course documents will be posted on the web site.

Course description:

This introductory course in chemistry stresses basic principles necessary for further chemistry study. Included are the following topics: mathematical preparation, atomic and molecular structure, chemical formulas, nomenclature, and equations, the mole concept, application of chemical principles to common substances, and ideal gas law calculations. Lab exercises will supplement course lectures.

Course meeting times:

	<i>Time</i>	<i>Room</i>
Lecture (Sections 1 and 2)	11:00 AM - 12:15 PM: MW	5401
Lecture (Section 3)	9:30 AM – 10:45 AM: TTH	5408
Lab, Section 1	2:30 PM - 5:20 PM: M	5402
Lab, Section 2	2:30 PM - 5:20 PM: W	5402
Lab, Section 3	11:00 PM - 1:50 PM: TH	5402

Evaluation and grading:

Your course grade will be determined by the following:

Tests and final exam****	75%
Laboratory	25%

****The cumulative final exam at the end of the course counts as two test grades.

Grading for the laboratory section of the course is described later in this syllabus.

The grading scale for this course is a traditional ten-point scale.

<i>Letter grade</i>	<i>Grade range</i>
A	90-100
B	80-89
C	70-79
D	60-69**
F	Any grade below 60**

**You must make at least a C to receive transfer credit!

Important dates:

All dates are subject to change

<i>Date</i>	<i>Event</i>
9/2 (M)	<i>Labor Day holiday: No class or lab!</i>
9/11 (W)	Test 1 (Sections 1 and 2)
9/12 (TH)	Test 1 (Section 3)
10/2 (W)	Test 2 (Sections 1 and 2)
10/3 (TH)	Test 2 (Section 3)
10/23 (W)	Test 3 (Sections 1 and 2)
10/24 (TH)	Test 3 (Section 3)
11/1 (F)	Last day to withdraw from CHM 110!
11/13 (W)	Test 4 (Sections 1 and 2)
11/14 (TH)	Test 4 (Section 3)
11/27 (W) – 11/29 (F)	<i>Thanksgiving Break – No class or lab!</i>
12/9 (M): 11:00 AM - 1:00 PM	Cumulative final exam (sections 1 and 2)
12/12 (TH): 9:30 AM - 11:30 AM	Cumulative final exam (section 3)

For other administrative dates, such as the last day to drop a class and still receive a refund, please refer to the student information handout from the business office - available on the course web site at the following link:

http://scienceattech.com/?page_id=1848

Attendance / Make-up policies:

It is your responsibility to attend all scheduled classes and observe all participation requirements in each of your courses. *If you are absent or fail to participate in more than 10% of the total hours that a course usually meets during a semester, you will be subject to a failing grade or withdrawal by the instructor.* It is your responsibility to initiate a withdrawal if you are unable to complete course requirements. If you simply stop coming to class without withdrawing from the course, you will be assigned a failing grade at the end of the course. Exceptions to this policy can be made only by the appropriate Associate Vice President.

If you must be absent from the class for any reason, you are responsible for any missed notes or assignments. Remember that each day's notes will be posted on the course web site.

You will *not* be allowed to make up labs. One laboratory report grade will be dropped at the end of the term. If you miss one laboratory session for *any* reason, that report grade will be dropped. If you attend every lab, your *lowest* report grade will be dropped.

You *will receive a zero grade* for the second and any further missed lab, and will receive zero credit for those entries In your laboratory notebook.

There are no make-up tests. If you miss a single test, the final exam grade will count in place of the missed test. If you know *in advance* that you will be absent on test day, you may contact me at least 3 days prior to the test date and I may (*my option*) allow you to take an early exam in the testing center. You will receive a zero grade for the second and any further missed tests.

In short, it's vitally important that you be in class and lab. In a college-level chemistry course, you can't afford to fall behind.

Withdrawal policy:

Students who do not complete course requirements must withdraw prior to the withdrawal deadline, or they will receive an "F" in the course.

The last day to withdraw from CHM 110 with a "W" is **November 1, 2013**. After this date, you may withdraw from the class only with the permission of the appropriate FDTC associate vice president. If you simply stop coming to class either before or after the withdrawal date, you will be assigned an "F" grade.

Disability statement:

If you have a documented disability and require special assistance or accommodations to participate fully as a student, or if you need more information, please contact Maureen Shuler, Room 104, 661-8029.

Academic dishonesty policy:

All forms of academic dishonesty including, but not limited to, cheating on tests, plagiarism, collusion, and falsification of information will be subject to disciplinary action.

- Cheating is defined to include, but not limited to, the following:
- Copying another student's work or test.
- Using unauthorized materials during a test.
- Collaborating with another during a test or on non-collaborative assignments.
- Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part contents of a test or other work.
- Bribing another person to obtain tests or information about tests.
- Substituting for another student, or permitting another to substitute for oneself.

Plagiarism is defined as the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit.

Falsification of information is defined to include, but not limited to the following:

- Forgery, alteration, or misuse of college documents, records, or identification.

- Destruction of evidence with the intent to deny its presentation to the appropriate hearing or panel.

Any proven case of academic dishonesty will result in an "F" for the assigned work or test and may result in administrative withdrawal from the course, with a grade of "F" assigned after an administrative hearing. Additional sanctions, including administrative probation or suspension, appropriate to the incidents may be imposed pursuant to the Student Code and Grievance Procedures.

Cell phones / electronic communications devices:

Cell phones and other electronic communications devices must be switched **off** before class or laboratory starts. If your cell phone or other device rings or vibrates loudly enough to disrupt the class, you will be asked to leave the classroom for the remainder of class. If you are employed in a job where you are required to be "on call" during class hours (police, fire, EMT, etc.), please provide me with appropriate documentation at the beginning of the semester. If you have an emergency situation that requires your cell phone to be on during class, please let me know **before** class.

Since cell phones and similar devices can be used to transmit test answers to and from the classroom, any use of cell phones or similar devices during a test will be considered cheating and will be dealt with accordingly.

Other information for students

A handout containing more administrative information you need to know is available at the following link:

http://scienceattech.com/?page_id=1848

Course objectives / competencies:

Upon completion of this course a student should be able to:

1. Understand and apply nomenclature.
2. Balance chemical equations.
3. Define and use correctly basic chemical vocabulary (i.e. chemical vs. physical properties, element vs. compound).
4. State atomic theory.
5. Convert units without equivalencies.
6. Use significant figures and scientific notation correctly.
7. Demonstrate factor-label method of solving problems.
8. Explain the basis of the atomic scale.
9. Determine from experimental data empirical and molecular formulas.
10. Calculate percent composition from a chemical formula.
11. Employ the atomic theory and Avogadro's number and associated mass relationships to solve problems.
12. Interpret the coefficients in a chemical equation in terms of moles.
13. Given quantities of reactants calculate quantities of products in a reaction and vice versa.

14. Apply concepts of theoretical yield, actual yield and percent yield to chemical reaction problems and limiting and excess reagents.
15. Demonstrate an understanding of the empirical gas laws and solve associated problems (Charles's Law, Boyle's Law etc.).
16. Apply the ideal gas law to stoichiometric problems.
17. Explain the empirical gas laws in terms of KMT.
18. Explain why real gases don't behave as ideal gases.
19. Make a distinction between line spectrum and continuous spectrum.
20. Explain line spectrum in terms of energy changes in the atom. (Bohr hydrogen atom model).
21. Derive electron configurations.
22. Interpret electron configuration in terms of the orbital structure derived from quantum numbers.
23. Demonstrate knowledge of the correlation between atomic structure and the periodic properties of the elements (the periodic table).
24. Apply concepts of atomic structure to chemical bonding, explaining ionic and covalent bonds (polar/nonpolar).
25. Derive the Lewis Dot structure of an atom showing valence electrons.
26. Derive formulas of ionic compounds.
27. Draw Lewis structures for covalent compounds.
28. Apply VSEPR Theory to predict molecular geometry.
29. Calculate heats of reaction given heats of formation and other applications of Hess's Law.
30. Calculate the heat of reaction from calorimetric data.
31. Use specific heats to calculate the relationship between heat flow and temperature changes.

LABORATORY INFORMATION

Lab schedule:

Labs meet once a week. The laboratory schedule for this course is posted *on the course web site*. You should visit the course web site and print out a copy of the laboratory schedule, or enter the experiments into your personal calendar.

Lab grading:

The lab grade will be tallied at the end of the semester and counted as part of your course grade. Labs are cooperative exercises. You will work in teams for each experiment, and your grade will be partially determined by your team's performance. You will turn in a laboratory notebook at the end of the laboratory term for assessment.

Your laboratory average will be calculated by adding together all of your laboratory report grades, adding in the notebook grade twice, and then dividing by the total number of grades. This laboratory average will count for 25% of your overall course grade.

- If you miss a lab, you will not get credit for that day's work (since you weren't there). The rest of your team will not be penalized.

- Most of the laboratory reports you will prepare in CHM 110 consist of completing report forms and questions found in the laboratory manual. You may tear out these pages of the lab manual to be turned in, or you may submit your reports on photocopies of these pages. (You will not be allowed to turn in your results and answers to questions on notebook paper.)
- Laboratory reports are due at the **end of the laboratory period**, unless another date is assigned by your instructor. Late laboratory reports will be penalized ten points **per day** (including weekends) late.
- Some experiments in the laboratory manual include “Prelab” sections. These “prelab” sections are part of your laboratory report, but do not require data from the experiment itself to complete. To save time in the lab, you should complete these “prelab” questions **before** you come to lab.
- Your laboratory notebook will be evaluated at the end of the term, after you perform the last experiment. The notebook will be checked for proper format and proper content. Guidelines for notebooks are posted on the course web site. If you are not sure whether you are doing your laboratory notebook correctly, ask your instructor to review it during a laboratory period.

Lab teams:

You will be assigned a team at the beginning of the semester. Lab teams will consist of either two (minimum) or three (maximum) people. You will work with your team the entire semester if possible. If for some reason you would like to change teams, please come see me. If a team drops to one student, teams will be rearranged so that everyone has a team of at least two people again. (This might require breaking up of a three-member team.)

Use your team members as a study group!

Lab policies:

You are responsible for working in the lab in a safe manner **and** for leaving the lab and the lab equipment clean and in order. Here are some things you need to be aware of while in the lab.

Safety. (This is a brief summary - we'll go over more in lab)

1. Safety is your top concern in the laboratory!
2. Some of our chemicals can hurt you in small amounts. Handle all chemicals carefully.
3. Be aware of safety features of the lab such as eye wash stations and fire blankets.
4. Wear safety goggles and protective aprons when **anyone** is working in the lab.
5. Do not eat or drink in the lab.

Cleanliness: (This is a brief summary - we'll go over more in lab)

1. Clean glassware after use. Don't put dirty glassware back in the drawers.
2. Return glassware to the place you got it after you're done.
3. Clean up any spilled chemicals. In particular, check on or around balances.
4. Throw trash in the wastebaskets, not in the sinks. Trash in the sinks clogs our

drains.

Preparation

1. Students are expected to read the assigned experiment(s) before each lab session.
2. Students will not be allowed to perform an experiment without a lab manual and lab notebook.
3. Each student must bring a scientific calculator to each session. Chemistry is a quantitative science, and almost all of the experiments require calculation.
4. Any student arriving to lab **more than twenty minutes after the lab's scheduled start time** will be counted absent and will not be allowed to participate in the experiment.