

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

CONCEPTS OF CHEMISTRY
CHEM 1310

Class Hours: 2.0

Laboratory Hours: 3.0

Credit Hours: 3.0

Revised: Fall 2016

Catalog Course Description

Composition of matter, atomic structure, bonding, gas laws, liquid and solid states, solutions, acids and bases, chemical reactions, nuclear chemistry and technology, polymers, household chemistry, and introduction to environmental and organic/medicinal chemistry. Course includes three hours of lecture and three hours of laboratory applications each week. A course designed for students seeking the Associate of Science in Teaching degree; course focuses on the elementary education science concepts via the Next Generation of Science Standards.

Prerequisites

Two from the following list of courses: MATH 1410, MATH 1420; either MATH 1010 or 1530

Textbook(s) and Other Course Materials

Textbook: Suchocki, John. *Conceptual Chemistry*, 3rd ed. Pearson/Benjamin Cummings, 2004. Ball, David W. *Essential Algebra for Chemistry Students*, 2nd ed. Brooks/Cole, 2006.

Lab Manual: There is no lab manual for this course. All labs and activities will be provided either in hardcopy format or via download from D2L.

Ancillary Materials: **Scientific Calculator (get a cheap one from Walmart, etc.)**

This course will be a “Web Enhanced” course utilizing D2L. From the college’s homepage, point your Web Browser to **Online Courses**, <https://elearn.pstcc.edu/> to Log-On. This webpage will be used for distribution of assignments, handouts, links to Web-based assignments, and other information as the semester progresses. Check the site frequently for new items and info! **NOTE:** this course will be activity/discussion-based; there will be **no makeup** sessions for any activities missed [see Section V for more details].

Week/Unit/Topic Basis

Unit	Topic
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| 1 | Introduction to the course; Chemistry Is a Science; Properties of Matter [Chap. 1]; Arithmetic of Chemistry [Chaps. 1] |
| 2 | Atoms and Atomic Structure [Chap. 2-5]; Nuclear Chemistry & Technology and Impact on Society [Chap. 4-5]; Nuclear Chemistry & Technology and Impact on Society [Chap. 4-5]; Chemical Bonding, Molecular Modeling [Chap. 6] |
| 3 | Solutions & concentrations [Chap. 7]; Chemical reactions [Chap. 9] |
| 4 | Acids, Bases Reactions [Chap. 10] |

Course Goals

Note: Roman numerals after course objectives reference goals of the Natural Sciences program

- A. Guide students in their understanding the fundamental concepts of atomic structure, molecular structure, and bonding. V.1, 3, 4; VII.1
- B. The course will enhance the students' ability to predict properties of elements from the periodic table based on an acquired knowledge of periodic law. V.1, 2, 3, 4, 5
- C. Apply the laws of chemistry and utilize the necessary mathematics to solve problems in chemical relationships. V.1, 2, 3, 4, 5; VI.2, 6
- D. Enhance the understanding of the Particulate Nature of Matter and basic kinetic molecular theory. V.1, 2, 3, 4
- E. Guide students to understand nuclear particles, balance nuclear equations, and distinguish between nuclear fission and fusion. V.1, 2, 3, 4, 5

Expected Student Learning Outcomes

Note: Capital letters after Expected Student Learning Outcomes reference the course goals listed below.

The student will be able to:

1. Demonstrate problem-solving ability with emphasis on chemical word problems and performance of mathematical calculations pertaining to unit conversions, significant figures, quantitative chemical relationships, density, solution concentrations. (C, E)
2. Use appropriate methods and equipment for making chemical observation and measurements in a laboratory setting. (A, B, C)
3. Employ the correct usage of chemical terms, name chemical compounds, understand and prediction of chemical behaviors. (A, B, D, E)
4. Apply the fundamental chemical concepts including atoms, subatomic particles, formation of ions, moles, molecules by identifying and writing formulas and equations, and other chemical notation. (A, E)
5. Draw and analyze 3-D models of Lewis structures for the elements and compounds, predict shapes and polarity of covalent compounds. (A, B, D)
6. Determine oxidation numbers and write formulas of compounds. (A, B, C)
7. Label bond type(s) for an element or compound and describe molecular type. (A, B, D)
8. Compare and contrast properties of the three phases of matter utilizing the Particulate Nature of matter and basic kinetic molecular theory. (A, D)
9. Understand the dissolution process. (A, D)
10. Understand and recognize the different acid-base theories, distinguish between strong vs. weak acids and bases and understand their reactions. (A, B, C)
11. Identify nuclear particles and balance nuclear reactions. (E)

Evaluation

Testing Procedures: 60 % of grade

Unit tests: 45% of the course grade: **FOUR** (4) tests will be given. **The LOWEST test will be dropped.**

There are NO MAKEUP Tests. Tests will be multiple choice, short answer, fill-in-the-blank, but **mainly** discussion/problem solving. There will be a “Lab Practical” question which allows students to analyze an experiment not performed in class, but covers related material.

Comprehensive final exam: 15% of the course grade. This exam will be multiple choice.

All students are required to take the final exam in order to receive credit for the course.

Laboratory Expectations: 40% of grade

- Attendance is required for scheduled course meetings. There are **NO MAKEUP** Lab sessions.
- **NOTE: Contact lenses** are NOT recommended to be worn in the laboratory.
- A comprehensive lab final (chemistry lesson project) will be given on the last day(s) of class worth 5% of grade. This will consist of presentations of student-designed experiments/demos and discussions explaining a scientific concept either studied during the semester or one of student interest (with approval from the instructor).
- **All students are required to complete the Lab final exam (project) in order to receive credit for the course.**
- Lab technique/etiquette will be allotted as subjective points toward the lab grade as deemed by the instructor (25 points). Evaluations are based on cleanliness of lab areas, following instructions, and general abilities in conducting experiments as outlined in each activity.
- Peer Evaluation of each group member’s participation and effort while working in the group throughout the semester. This portion of the grade will not constitute more than 25 points towards the total semester grade.

Field Work:

N/A

Other Evaluation Methods

Homework Problems

You are strongly encouraged to work ALL of the assigned problems— the course does not have “busy work”! If it is important, it will show up in problems assigned from the text and/or “problem sets” that are distributed during class and on D2L. These are not graded assignments; you are expected to work them out on your own. The answers to odd-numbered Exercises and Problems are in Appendix C of the text. Other solutions will be made available by the instructor.

Late Work Submissions

A any assignments that are turned in late, if accepted, are subject to an automatic 20% or more deduction in points. If you are absent on a due date, the assignment is still counted as late. It is at the SOLE discretion of the instructor as to whether a Lab or Homework or other assignment will be accepted late.

Grade Breakdown

Exams	45%
Lab Expts.	35%
Expt/Demo Lab	5%
FINAL Exam	15%

Grading Scale

90.0 - 100.0	A
87.5 - 89.9	B+
80.0 - 87.4	B
77.5 - 79.9	C+
70.0 - 77.4	C
60.0 - 69.9	D
Below 60.0	F

Policies

Attendance Policy

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.

- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for disabilities

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course.

Disability Services may be contacted by sending email to disabilityservices@pstcc.edu, or by visiting Alexander 130. More information is available at the [Disability Services website](http://www.pstcc.edu/sswd/). (<http://www.pstcc.edu/sswd/>).

Other Policies

- Cell phones are not to be used in the classroom at any time. Please turn off (or on vibrate) all cell phones and pagers or other electronic devices that make audible sounds that may disturb the classroom environment as deemed by the instructor.
- Visitors/minors are **not** allowed in the classroom or the laboratory.
- Extended Campus Closure Policy: Pellissippi State Community College is committed to the educational process and student learning. In the event of a prolonged college closure, the college and the instructor are committed to completing the requirements of the course, even if the class cannot meet in person for an extended period of time. Students should continue with the reading assignments and homework based on the course syllabus. It is also each student's responsibility to check both his/her PSCC e-mail and his/her online course for further announcements and/or assignments from the instructor if the college is closed for an extended period of time. Since not all courses can be completed in a distance format, in the event of a prolonged closure the college will add additional instructional days at the end of the semester to facilitate completing the course requirements. The instructor will make use of these additional instructional days at the end of the semester especially for completion of the laboratory portion of the course. The final exam will then also be extended until after the additional instructional days are completed.
- Dropping/Withdrawing course: Attention Financial Aid and/or HOPE Scholarship Recipients: Maintaining continuous attendance in your classes is very important. If you are considering dropping or withdrawing from a course, please check with the Financial Aid Office before doing so. Dropping or withdrawing from a class can adversely affect your financial aid and/or lottery eligibility.