

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

GENERAL CHEMISTRY II
CHEM 1120

Class Hours: 3.0

Credit Hours: 4.0

Laboratory Hours: 3.0

Revised: Fall 2012

Catalog Course Description:

Chemical equilibrium, thermochemistry, electrochemistry, introduction to organic chemistry. Course includes three hours of lecture and three hours of laboratory applications each week.

Entry Level Standards:

Two years of high school algebra or one year of high school algebra and one year of high school geometry are necessary for entrance to the course.

Prerequisite:

CHEM 1110

Textbook(s) and Other Course Materials:

Burdge and Overby. *Chemistry – Atoms First*, 1st edition. McGraw Hill, 2012.
CHEM 1120 Lab Notebook containing experiments (discussion, procedure, report sheets and homework sheets) and problem sets.

Programmable calculators may not be used on the tests in this course. A non-programmable scientific calculator is required (ex. TI - 30X).

I. Week/Unit/Topic Basis:

Week	Topic
1	Solutions (review terms, concentrations and dilutions), ch. 9.5, 13.3
2	Solutions (dissolution process) ch. 13 Solutions (colligative properties) ch. 13
3	Acids, bases and salts (review), ch. 9.3, ch. 16.1-16.3
4	Chemical equilibrium, ch. 15.1-15.5
5	pH scale, strong and weak acids and bases, ch. 16.3-16.9
6-7	Ionic equilibria I: acids and bases (salts and buffers), ch. 16.10-16.12, 17.1-17.2
7	Ionic equilibria II: acids and bases (titration curves). ch. 17.3
8	Ionic equilibria II: acids and bases (titration curves). ch. 17.3

9	Ionic equilibria III: 'insoluble' salts (solubility product principle, K_{sp}) ch. 17.4-17.5; MIDTERM EXAM
10	Chemical kinetics, ch. 14.1-14.8
11	Nuclear chemistry, ch. 20.1-20.8
12	Balancing oxidation-reduction reactions, ch. 19.1
13-14	Redox titrations; Electrochemistry, ch. 19.2-19.8
14	Organic chemistry (a brief introduction)
15	FINAL EXAM

II. Course Goals*:

The course will:

- Develop student skills in mathematical calculations related to solution chemistry. VI.1, VI.4
- Provide knowledge of the nature and behavior of electrolytes. V.4
- Teach methods of balancing redox equations, illustrate the concepts of electrochemistry and provide practice in the related mathematical calculations. VI.4, V.4
- Enhance understanding and performance of mathematical calculations on single and multiple ionic equilibria. VI.2, VI.4, V.4
- Expand student understanding of nuclear particles, nuclear equations and the processes of nuclear fission and fusion. V.3, V.5

* Roman numerals after course goals reference General Education Goals.

III. Expected Student Learning Outcomes*:

The student will be able to:

- Work solution problems that involve dilutions and expressing various concentrations. A
- Understand the dissolution process and colligative properties. A
- Solve colligative property problems. A
- Understand and recognize the different acid-base theories. B
- Distinguish between strong vs. weak acids and bases and understand their reactions. B
- Understand the procedure and calculations involved in a titration. A, B, D
- Understand the concepts involving the chemical equilibrium constant, K . A
- Recognize electrolytes and understand their behavior. B
- Determine pH and solve calculations involving the concentration of the hydrogen ion. A, B, D

10. Understand the concept of buffer solutions. A, B, D
11. Understand and perform calculations involving salt hydrolysis. A, B, D
12. Determine the solubility product constant, K_{sp} . A, B, D
13. Understand the concepts of chemical kinetics and determine the rate constant, k . A, D
14. Identify nuclear particles and balance nuclear reactions. E
15. Understand radioactive decay of a nuclide and determine its rate of decay and half-life. E
16. Distinguish between nuclear fusion and fission. E

17. Balance oxidation reduction reactions by the change in oxidation number method and the half reaction method. C
18. Solve redox problems. C
19. Diagram electrolytic and voltaic cells and understand the redox reactions involved. C
20. Determine standard electrode potentials and use the Nernst equation if standard conditions do not exist. C

*Capital letters after expected student learning outcomes reference the course goals above.

IV. Evaluation:

A. Testing Procedures: 75% of grade

Chapter exams and comprehensive midterm — 55%

Comprehensive final examination -- 20%

Tests may NOT be taken later than scheduled date. There will be 5 chapter(s) exams approximately every two weeks (equal points) and ONE may be dropped. If absent, the missed exam is automatically dropped. The departmental midterm (week 5) and standardized final (week 8) will be multiple choice. Midterm (55 min.) will cover material discussed the first 7 weeks. **Final** (110 min.) will be comprehensive and **cover material from CHEM 1110 and CHEM 1120.**

B. Laboratory Expectations: 25% of grade

Pre-lab activities, lab reports, homework sheets, problem sets and lab final -- 25%

Attendance is required for scheduled lab meetings. Labs may NOT be made up!

Experiment report sheets are to be completed in ink. No "white-out" allowed! Problem sets, homework sheets and the Lab Final Exam may be completed in pencil.

Safety eye wear must be worn during every lab involving an experiment. **Closed toe/heel shoes are required (no clogs/sandals).** See lab schedule for order/dates of labs and problem sets.

C. Field Work:

N/A

D. Other Evaluation Methods:

Bonus points and/or extra credit given during the lecture portion of the course may not exceed

10% of the total grade earned in the course. This means that the total bonus points possible on tests or extra assignments should not exceed 20% of the total points earned in class (50% of 20% = 10%).

E. Grading Scale:

90 - 100	A	NO plus grades (B+ and C+)
80 - 89.9	B	are given. Percentages may be
70 - 79.9	C	rounded up if > 0.5 at the
60 - 69.9	D	instructor's discretion.
<60	F	

V. Policies:

A. 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.

B. 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.

C. Accommodations for disabilities:

Students who 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 Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at <http://www.pstcc.edu/sswd/>.

D. Other Policies:

Cell Phone Policy:

Cell phones may not be used during class. Emergency situations must be discussed with the instructor.