CHEM 112 – General Chemistry II
Syllabus
Spring 2015, Sections 001-005

Prerequisites: MATH 111, 115 or higher and a grade of C or better in CHEM 111 or CHEM 141.

Students who do not meet the prerequisites will be administratively dropped from the class.

Instructor: Dr. Andrew B. Greytak Office: GSRC 409 Tel. 777-0672
greytak@sc.edu

Office Hours: 2:00-300 PM Mondays and Wednesdays, GSRC 409 (tentative)

Website: Course website on Blackboard: Syllabus, course materials, & grade center

Course info: http://www.chem.sc.edu/faculty/greytak/Education.html

Required Materials:

- *Chemistry: Principles & Practice*, 3rd Edition, Reger, Goode and Ball, Chapters 12–18.
  Mobile, electronic access to the text is available through OWL.
- *Chemistry 112: Lecture Notes and Lab Manual*, Freeman, Reger, Goode, Taylor-Perry
- OWL Access Code (see below) – note that the Russell House bookstore has a unbound copy of the text bundled with 24-month OWL subscription
- iClickers will be used in this class. Details below.
- (Optional) *Student Solution Manual*, Reger, Goode and Mercer.

Lecture: MW 8:05 – 9:20 AM Jones PSC Room 210

Attendance is essential for earning a good grade. Important information and changes in the class schedule will be presented in lecture. Students are responsible for getting notes and information from any missed lectures. The lecture schedule and copies of the slides can be found on Blackboard.

If you need to enter or leave the classroom during the lecture, consider using the rear doors to minimize disruption.

OWL:

Online Web-based Learning (OWL) is the online homework system used in this class. Set up an account as soon as possible at http://www.cengage.com/owl/. Additional purchasing information is posted at http://sc.bncollege.com.

The first OWL assignment is due Wednesday, January 21 at 11:59 PM. Subsequent OWL assignments will be due weekly on Mondays at 11:59 PM. You must complete all "Required" assignments by the indicated due date. There will be no extensions, but 50% credit will be given for late work.

Assignments categorized as "Supplemental Material" are a complement to the textbook and lecture – usually visualizations/interactive exercises. No credit is given, but you may find it helpful.

We do not directly operate the OWL system. Use the support button on the OWL page for any technical problems.

Discussing problems with other students, TAs and the instructor is often a helpful way to study. However, **it is much harder (and more instructive) to work a problem independently than to watch someone else solve the problem!** After a discussion, do a similar problem independently to be sure you understand it. Suggested problems from the textbook are posted with the course schedule.

Recitation:

Recitations start the first week. Attendance is required at the recitation specified for your Chem 112 section. Graded quizzes will be given, and problem solving will be practiced. Your recitation instructor is the first point of contact for questions about course material.

Teaching assistant: Yi Shen, shen8@email.sc.edu.

You may attend office hours for any Chem 112 TA: a list of office hour times (in PSC 111) will be distributed.

Supplemental Instruction:

Supplemental Instruction (SI) sessions are available three times a week. Your SI leader, Makenzie Perdue (perdueml@email.sc.edu), is an undergraduate who excelled in this class.

iClicker:

We will use i-clickers most days in class. Responses to i-clicker questions will count towards up to 20 out of 25 "extra credit" points that can be added to the total of exam, homework, and quiz scores prior to assigning your final grade. Credit is given both for participation and for correctness in answers to in-class exercises.

i-clicker version 1 or 2 is OK; smartphone will not work.

You must register your i-clicker remote through Blackboard to receive credit.

Laboratory: Chem 112L is a required co-requisite of this class, but it is administered and graded separately. Contact Amy Tylor-Perry (taylora4@mailbox.sc.edu, PSC 117, 803-777-1540) for all questions about Chem 112L.

Midterm Exams: There will be three midterm exams:

Exam I: Wednesday, February 11
Exam II: Wednesday, March 18
Exam III: Wednesday, April 15

There are no make-up exams. **One-half of the Final Exam score (i.e. the percentage score on the final) can be substituted for one missing or low-scoring midterm exam.** Only one such substitution is allowed.

If you have a conflict based on official University business, contact the instructor.

For each exam, please bring:

1) calculator (check battery)
2) pencils
3) picture ID card

A sheet of standard formulas and physical constants **will be provided** with each exam. **All other notes**, books, programs or other prepared materials may **not** be used during the test. Calculators may not be shared. All other electronics, including cell phones, must be inaccessible and out of view. Visible electronics are presumed to be in use and such use will be penalized accordingly.

Note on exam preparation: OWL contains exercises of increasing complexity to guide you to the level of the tests, **but is primarily meant as a learning tool, rather than evaluation**. The tests will be most similar to the "End of Chapter" OWL problems, the questions in the textbook, and the recitation quiz questions. Sample exams will be distributed prior to each midterm.

Final Exam: **Friday, May 1, 9:00 AM in PSC 210**

The final exam is comprehensive, includes new material from Chapter 18, and is required of all students.

Course Grade:

Score calculation

Exam I:	100 pts
Exam II:	100 pts
Exam III:	100 pts
Final Exam:	200 pts
OWL	75 pts
Quizzes	75 pts
Total	**650 pts**
Extra Credit	25 pts

Approximate grading curve

A	>90%	>585
B+	90–87%	584–565
B	87–80%	564–520
C+	80–77%	519–500
C	77–70%	499–455
D+	70–67%	444–435
D	67–60%	434–390
F	<60%	<389

The grading curve may be adjusted based on overall class performance.

Following midterm exams, approximate letter grade scales may be discussed. However, final grades will be assigned on the basis of point totals.

All required elements of the course are to be completed within the normal term. Failure to complete all the elements on time will result in a grade of F. Incompletes will only be assigned in unusual circumstances.

Academic Dishonesty: Cheating, plagiarism, copying from old reports, and other forms of academic dishonesty in connection with any portion of this course will normally result in failure of the course. Cooperating in academic dishonesty will also result in failure. Submitting an OWL answer without working through the problem independently is considered cheating. All incidents of academic dishonesty will be reported to the student's College for possible further disciplinary action.

Cell Phones, etc. Please turn off cell phones (not just silent) during lecture. Texting, web surfing, reading newspapers, and other activities not related to the class are not allowed during the lecture. During tests, electronics other than calculators must be out of sight and inaccessible.

Copyright: All materials from this class are copyrighted. They may not be publically posted or transferred to third parties. Please contact the instructor if you wish to record the lectures.

Topics: Introduction to the properties of solutions, chemical equilibrium and its application to acid/base chemistry and solubility, chemical kinetics and thermodynamics, redox reactions, and electrochemistry.

Learning Outcomes: After completing CHEM 112, students will be able to:

- Make both qualitative and quantitative predictions of the solubility of compounds.
- Predict the physical properties of dilute solutions.
- Predict the direction and extent of chemical reactions at various temperatures using equilibrium constants and thermodynamic data.
- Calculate pH of solutions of acids and bases and pH changes in acid–base reactions.
- Determine rate laws from kinetic data and vice versa. Calculate chemical reaction rates at different temperatures.
- Balance oxidation–reduction reactions and assess the number of electrons transferred.
- Interconvert voltages, spontaneity and thermodynamic quantities in electrochemical reactions.

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Course Schedule
Spring 2015, Sections 001-005

* OWL assignments due, 11:59 PM

#	Date		Chapt.	Secs.	Text Exercises
1	01/12	M	Intro. Chapt. 12: Solutions	Syllabus 1	 12.17–40
2	01/14	W		2 3	12.41–48 12.49–62
	01/19	M	No class – MLK Day		
3	01/21	W*		4 5	12.63–72 12.73–84
4	01/26	M*	Chapt. 14: Equilibrium	6 (only ideal) 1 2	12.85–86 14.13–28 14.29–34
5	01/28	W		3 4	14.35–42 14.43–60
6	02/02	M*		5 6	— 14.61–74
7	02/04	W	Chapt. 15: Acids & Bases	7 1	14.75–78, 79–84 15.23–32
8	02/09	M*		2 3	15.33–42 15.43–48
9	02/11	**W**	**Exam 1**	**Chapts. 12 and 14**	
10	02/16	M*	Chapt. 15 cont'd	4 5	— 15.49–68
11	02/18	W		6 7	15.69–94 15.95–98
12	02/23	M*	Chapt. 16: Acid/Base rxns	8 (no 9, Lewis acids) 3	15.99–104 16.29–46
13	02/25	W		1 2	16.13–18 16.19–28
14	03/02	M*		4 5	— 16.47–58
15	03/04	W		6 7 (no amphoteric) 8 (no complexes, no amphoteric)	16.59–64 16.65–16.68 16.65–68
	03/05	Th	Last day to drop without receiving WF		
	03/09-03/13		No Class – Spring Break		
16	03/16	M*	Chapt. 13: Kinetics	1 2	13.21–32 13.33–42
17	03/18	**W**	**Exam 2**	**Chapts. 15 and 16**	

18	03/23	M*	Chapt. 13 cont'd	3	13.43–58
19	03/25	W		4 5	13.59–66 13.67–68
20	03/30	M*		6	13.69–82
21	04/01	W	Chapt. 17: Thermodynamics	1 2	17.23–34 17.35–48
22	04/06	M*		3 4	17.51–56 17.57–82
23	04/08	W		5	17.83–102
24	04/13	M*	Chapt. 18: Electrochem.	1 2	18.09–20 18.21–38
25	04/15	**W**	**Exam 3**	**Chapt. 13 and 17**	
26	04/20	M*	Chapt. 18 cont'd	3 4	18.39–42 18.43–54
27	04/22	W		5 6	18.55–60 18.61–70
28	04/27	M*		7	
	04/28	Tu	"Reading Day"		
	05/01	**F**	**Final Exam, 9:00-11:30 AM, PSC 210**		