

CHEM 112 – General Chemistry II
Fall 2016, Sections 10, 011-020 S11

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: Prof. Aaron Vannucci Office: Horizon 015 Phone: 803-576-6071
Email: vannucci@mailbox.sc.edu

Office Hours: Mon. and Wed. 10:00 – 11:30 AM or email to schedule an appointment

Website: <http://www.vrg-uofsc.com/Teaching.html> Grades on Blackboard: <https://blackboard.sc.edu>.

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*, Reger, Freeman, Goode, Taylor-Perry
- OWL Access Code (see below)
- iClickers will not be used in this class.

Lecture: T Th 10:05-11:20 AM JONES 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 at

<http://www.vrg-uofsc.com/Teaching.html>

Attendance is required and will be taken every day. Attendance of all class meetings is expected. Students are expected to attend each scheduled class meeting, to be on time, and to be prepared for each class session. The University attendance policy specifies that students may miss up to 3 class meetings (10% of class time) without penalty. The 4th absence will result in a grade penalty of one letter grade. The 5th absence will result in a deduction of 2 letter grades. Homework cannot be made up, nor the deadline extended. Exams cannot be made up; the final exam will be used to replace one missed or low exam. Note: Students using cell phones or other electronic devices during class will be marked absent for the day. Absent mind, absent student.

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) version 2 is the online homework system used in this class. Set up an account as soon as possible at <https://login.cengagebrain.com/course/E-X7FGYGP2RQLBE> Links to additional resources are on the course website listed above.

Assignments start immediately and are due weekly. 50% credit will be given for late work. Supplemental Material is a complement to the textbook and lecture. No credit is given.

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 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.

Recitation: Recitations start the week of August 22th. Attendance is required. Graded quizzes will be given, and problem solving will be practiced. Your recitation TAs for this course are Christain Juillerat (juillerc@email.sc.edu), Olivia Manley (omanley@email.sc.edu), and Alyssa West (amwest@email.sc.edu)

Supplemental Instruction: Supplemental Instruction (SI) sessions are available three times a week. Your SI leader is Erica Rubin (erubin@email.sc.edu)

Laboratory: Chem 112L is a required co-requisite of this class, but it is administered and graded separately. Information can be found on Blackboard. Contact Amy Taylor-Perry (taylor4@mailbox.sc.edu, PSC 117, 803-777-1540) for all questions about Chem 112L.

Midterm Exams: OWLv2 contains exercises of increasing complexity to guide you to the level of the tests. The tests will be most similar to the End of Chapter problems or the questions in the textbook. Sample exams will be posted at <http://www.vrg-uofsc.com/Teaching.html>

There will be three midterm exams:

- Exam I: Thursday, 9/13
- Exam II: Tuesday, 10/11
- Exam III: Thursday, 11/10

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. No notecards will be allowed for exams.

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 will be penalized accordingly.

There are no make-up exams. One-half of the Final Exam score will be substituted for one missing or low scoring midterm exam. Only one such substitution is allowed.

Final Exam: Thursday, December 8th at 9:00 AM

The final exam is comprehensive and required.

Course Grade:	Score calculation	Approximate grading scale
	Exam I: 100 pts	A >585 pts
	Exam II: 100 pts	B+ 584–565 pts
	Exam III: 100 pts	B 564–520 pts
	Final Exam: 200 pts	C+ 519–500 pts
	OWL 75 pts	C 499–455 pts
	Quizzes 75 pts	D+ 454–435 pts
	Total 650 pts	D 434–390 pts
	Extra Credit up to 25 pts	F <389 pts

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

Following exams, approximate letter grades 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. 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 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.

Tentative Course Schedule

Day	Date	Chapter	Sections	Text Exercises
Thursday	18 Aug	Intro. Chapt. 12	Syllabus 1	12.17–40
Tuesday	23 Aug		2 3	12.41–48 12.49–62
Thursday	25 Aug		4 5	12.63–72 12.73–84
Tuesday	30 Aug	Chapt. 14	6 (only ideal) 1 2	12.85–86 14.13–28 14.29–34
Thursday	1 Sept		3 4	14.35–42 14.43–60
Tuesday	6 Sept		5 6	— 14.61–74
Thursday	8 Sept	Chapt. 15	7 1	14.75–78, 79–84 15.23–32
Tuesday	13 Sept	Exam 1	Chapts. 12 and 14	
Thursday	15 Sept		2 3	15.33–42 15.43–48
Tuesday	20 Sept	Chapt. 15	4 5	— 15.49–68
Thursday	22 Sept		6 7	15.69–94 15.95–98
Tuesday	27 Sept	Chapt. 16	8 (no 9, Lewis acids) 3	15.99–104 16.29–46
Thursday	29 Sept		1 2	16.13–18 16.19–28
Tuesday	4 Oct		4 5	— 16.47–58
Thursday	6 Oct		6 7 (no amphoteric) 8 (no complexes, no amphoteric)	16.59–64 16.65–16.68 16.65–68
Tuesday	11 Oct	Exam 2	Chapts. 15 and 16	
Thursday	13 Oct	Fall Break	No Classes	
Tuesday	18 Oct	Chapt. 13	1 2	13.21–32 13.33–42
Tuesday	20 Oct		3 4	13.43–58 13.59–66
Thursday	25 Oct		5 6	13.67–68 13.69–82
Tuesday	27 Oct.	Chapt. 17	1 2	17.23–34 17.35–48

Thursday	1 Nov		3 4	17.51–56 17.57–82
Tuesday	3 Nov		5	17.83–102
Thursday	8 Nov	Election Day	No Classes	
Thursday	10 Nov	Exam 3	Chapts. 13 and 17	
Tuesday	15 Nov	Chapt. 18	1 2	18.09–20 18.21–38
Thursday	17 Nov		3 4	18.39–42 18.43–54
Tuesday	22 Nov		5 6	18.55–60 18.61–70
Thursday	24 Nov.	Thanksgiving	No Classes	
Tuesday	29 Nov.		Variable or Review	
Thursday	2 Dec		Final Exam Review	
Thursday	8 Dec	Final Exam	Chapts. 12-18	9:00 AM