

CHEM 112 – General Chemistry II Fall 2015, Sections 11-17, 19, 20

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. Sophya Garashchuk Office: GSRC 407 Phone: 803-777-8900
Email: garashch@mailbox.sc.edu

Office Hours: starting 08/27/15 Mon 10-11 am; Thu 2:00-3:00 pm

Website: All information is posted 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 be used in this class. Either iClicker or iClicker 2 will work. Needed by September 1st lecture. To register your i>clicker go to Blackboard, select CHEM112 and select ‘Tools’ in the left column; follow the link ” i>clicker Student Registration” to register.

Lecture: T Th 10:05-11:20 JONES 210 Be prompt. Extra credit quizzes are given.

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 can be found on Blackboard.

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. Extra credit quizzes cannot be made up. 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. Have your calculators ready to solve problems in each class.

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/>. Links to additional resources are at Blackboard.

Assignments start immediately and are due weekly. 50% credit will be given for late work.

Supplemental (Optional) 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 24th. Attendance is required. Graded quizzes will be given, and problem solving will be practiced. Graduate student will teach the recitation. Ryan Key keyrj@email.sc.edu or Benjamin Lamm blamm@email.sc.edu

Supplemental Instruction: Supplemental Instruction (SI) sessions are available three times, conducted by Morgan Woods (mwoods@email.sc.edu) who is an undergraduate who excelled at this class.

iClicker: Please register your iClicker via **Blackboard**. iClicker version 1 (multiple-choice only) is acceptable, but version 2 (allows numeric and text answers) is preferred. In-class iClicker responses will be counted toward a homework grade.

Midterm Exams: OWL 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 on Blackboard.

There will be three midterm exams:

- Exam I: Thursday, 09/17
- Exam II: Thursday, 10/20
- Exam III: Thursday, 11/19

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 10th, 9:00-11:30 am

The final exam is comprehensive and required.

Course

Score calculation

Approximate grading scale

Grade:	Exam I:	100 pts	A	$\geq 87\%$
	Exam II:	100 pts	B+	$\geq 81\%$
	Exam III:	100 pts	B	$\geq 75\%$
	Final Exam:	200 pts	C+	$\geq 69\%$
	OWL	75 pts	C	$\geq 62\%$
	Quizzes	75 pts	D+	$\geq 56\%$
	Total	650 pts	D	$\geq 50\%$
	Extra Credit	up to 25 pts	F	$< 50\%$

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. 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 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
1	Thursday	20 Aug	Intro. Chapt. 12	Syllabus 1	12.17–40
2	Tuesday	25 Aug		2 3	12.41–48 12.49–62
3	Thursday	27 Aug		4 5	12.63–72 12.73–84
4	Tuesday	1 Sept	Chapt. 14	6 (only ideal) 1 2	12.85–86 14.13–28 14.29–34
5	Thursday	3 Sept		3 4	14.35–42 14.43–60
6	Tuesday	8 Sept		5 6	— 14.61–74
7	Thursday	10 Sept	Chapt. 15	7 1	14.75–78, 79–84 15.23–32
8	Tuesday	15 Sept		2 3	15.33–42 15.43–48
9	Thursday	17 Sept	Exam 1	Chapts. 12 and 14	
10	Tuesday	22 Sept	Chapt. 15	4 5	— 15.49–68
11	Thursday	24 Sept		6 7	15.69–94 15.95–98
12	Tuesday	29 Sept	Chapt. 16	8 (no 9, Lewis acids) 3	15.99–104 16.29–46
13	Thursday	1 Oct		1 2	16.13–18 16.19–28
14	Tuesday	13 Oct		4 5	— 16.47–58
15	Thursday	15 Oct		6 7 (no amphoteric) 8 (no complexes, no amphoteric)	16.59–64 16.65–16.68 16.65–68
16	Tuesday	20 Oct	Exam 2	Chapts. 15 and 16	
17	Tuesday	27 Oct	Chapt. 13	1 2	13.21–32 13.33–42
18	Thursday	29 Oct	Chapt. 13	3 4	13.43–58 13.59–66
19	Tuesday	3 Nov		5 6	13.67–68 13.69–82
20	Thursday	5 Nov	Chapt. 17	1 2	17.23–34 17.35–48
21	Tuesday	10 Nov		3 4	17.51–56 17.57–82

22	Thursday	12 Nov		5	17.83–102
23	Tuesday	17 Nov	Chapt. 18	1 2	18.09–20 18.21–38
24	Thursday	19 Nov	Exam 3	Chapts. 13 and 17	
25	Tuesday	24 Nov		3 4	18.39–42 18.43–54
26	Tuesday	1 Dec		5 6	18.55–60 18.61–70
27	Thursday	3 Dec		Variable or catch-up	
30	Thursday	10 Dec	Final Exam	Chapts. 12-18	9:00-11:30 am

PREPARING FOR THE CLASS – 12 HOURS PER WEEK

You are enrolled in a very demanding class – there is a reason why Supplemental Instruction is provided. Expect to spend:

1. Read the chapter. (2 hr/week)
2. Do the homework. (2 hr/week)
3. Do all odd-numbered problems at the end of the chapter. (4 hr/week)
4. Review material that you are having difficulty mastering (1 hr/week)
5. Review 12 hr for each test. (3 hr/week). You should work two of these hours in a productive, weekly study group (SI is good). Remember that practice makes perfect. The best way to learn how to solve chemistry problems is to solve lots of chemistry problems.

COMMUNICATIONS – REALLY IMPORTANT

You are enrolled in a large class, thus it is essential that you address your questions to the right person in order to have it answered, after checking the syllabus and Blackboard

Please, make a note of your section and include it into all emails

OWL: technical – contact **OWL tech support**; see <http://services.cengage.com/dcs/owl/start/resourcelist/>

OWL: all other questions – **Benjamin Lamm** blamm@email.sc.edu

RECITATIONS: contact the **TA** responsible for your section; recitations start the week of 08/24/2015

LECTURES: Grades, points, attendance, schedule, iClicker – **Benjamin Lamm** blamm@email.sc.edu

LECTURES: Course material and problem solving – your professor, **Sophya Garashchuk**. My mission is to TEACH and make you understand chemistry

SUPPLEMENTAL INSTRUCTION: contact your SI leader **Morgan Woods** mwoods@email.sc.edu

LABS are NOT part of this class; the labs start the week of 08/31/15; contact **Dr Taylor-Perry** taylor4@mailbox.sc.edu with any questions