

CHEM113A
General Chemistry I
Fall 2014
Office Hours: Mon., 2:00-3:00pm
Wed., 10:30-11:30am
Thurs., 1:00-2:00pm

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Course Information:

- Lectures on MWF, 7:50-8:40am, in Collier HOSCI 204 (Dana Lecture Hall)
- Problem Session on Thurs., either 7:50-8:40am, or 8:55-9:45am in Collier HOSCI 202 (Mellon Lecture Hall)
- Laboratory on either Tues. 12:45-3:45pm, Wed. 1:15-4:15pm, Thurs. 12:45-3:45pm, or Fri. 1:15-4:15pm in Collier General Chemistry Lab 210 (separate lab syllabus)

Course Materials:

- Required text: “Chemistry: The Central Science, 12th Edition” by Brown/LeMay/Bursten/Murphy/Woodward (ISBN#978-0-321-69672-4)
- Required Sapling account: You are required to register with the Sapling Online Learning System and complete online homework assignments there throughout the semester. Instructions for student access to Sapling are printed on the last page of this document and are posted on the course BlackBoard site.
- Scientific calculator: Required for this course, must do exponents, logs, sci. notation does NOT need to graph and does NOT need to be programmable CANNOT be an app on your mobile device you MUST have one OF YOUR OWN for each quiz/exam
- Optional manual: “Solutions to Exercises in Chemistry: The Central Science, 12th Edition” by Wilson (ISBN#978-0-321-70500-6)
- Black Board Site: At <http://blackboard.moravian.edu/> you can enroll in the course page for CHEM113A. Throughout the semester important announcements, lecture documents, and pertinent links will be posted. Please access this site!

Course Description:

This is the first semester of a two-semester introductory chemistry sequence. In the first semester of General Chemistry, students will be introduced to the fundamental principles of chemistry as a quantitative science including inorganic reactions, thermochemistry, atomic theory and structure, and properties of gases, liquids and solids. Some prior familiarity with basic material from High School Chemistry is helpful, although prior in-depth knowledge of topics is not expected.

Goals of the Course:

Expectations of students completing this course include (but are not limited to) the following:

- Naming simple inorganic salts and simple inorganic compounds (going from name to formula, and from formula to name)
- Solving basic stoichiometric problems involving weight, solutions, and gases in any combinations
- Writing balanced chemical equations for simple reactions, including net ionic equations for reactions in aqueous solution

- Understanding the atomic nature of matter including the components of the atom and the modern theories of their arrangement in the atom
- Understanding the properties of atoms and explaining these properties in terms of atomic interactions
- Understanding the basic heat transformations in chemical systems
- Drawing Lewis structures for simple inorganic molecules from a chemical formula and predicting the 3D geometry and hybridization around an atom
- Understanding the bulk properties of matter and the intermolecular reactions that lead to these properties

Attendance Policy:

Your presence is welcome and expected in all course meetings (class, problem sessions, and laboratories). As a reminder, the college policy on attendance can be found at <http://www.moravian.edu/studentLife/handbook/academic/academic.html>. If you anticipate an unavoidable absence (due to an extenuating circumstance that is documented by an academic dean or health professional), please notify the instructor as soon as possible. You are responsible for providing documentation and making arrangements in a timely manner or else a grade of zero will be assigned for missed work.

Students who wish to request accommodations in this class for a disability should contact Ms. Elaine Mara, Assistant Director of Learning Services for Academic and Disability Support at 1307 Main Street (610-861-1510). Accommodations cannot be provided until authorization is received from the office of Learning Services.

Academic Honesty Policy:

Please be familiar with the college policy on academic honesty that applies to this course (<http://www.moravian.edu/studentLife/handbook/academic/academic2.html>). In addition, throughout this course, each student may exchange experimental details and data with her/his lab partner and classmates. However, any work submitted in your name is to be your work alone. You may discuss work with others on assignments and labs, but merely copying answers is not acceptable.

Cell Phone Policy:

Please have the courtesy to turn off/not use/not answer your cell phone during course meeting times. For quizzes and exams, cell phones MUST be put away out of sight (in your backpack, NOT your pocket) or else a score of zero will be assigned by your instructor.

Grading:

Your grade in this course does not depend on the grade of any other student in the class. Instead, your letter grade will be determined by the percentage of total possible points you earn in this course, according to the following scale:

Percentage	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+

Percentage	Letter Grade
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
< 60	F

The total number of possible points in this course is *anticipated* to be as follows:

I.	Exams (4@100pts each)	400pts
II.	Optional Quizzes* (4@25pts each)	*
III.	Online HW (10@15pts each)	150pts
IV.	Learning Activities (10@10pts each)	100pts
V.	Final Exam	150pts
VI.	Laboratory: 11 labs – total scaled to	200pts
	Total for Course	1000pts

I. Exams: Four exams will be given in class during the semester. These exams will be administered during lecture time on September 19th, October 10th, October 31st, and November 21st. There will be no exceptions on exam times and no makeup exams are given.

II. Quizzes*: There will be four quizzes given in class during the semester. These quizzes will be administered during the lecture times on September 5th, October 1st, October 22nd, and November 12th. There will be no exceptions on quiz times and no makeup quizzes are given. The quizzes are designed to impact your grade positively or not at all. At the end of the semester, if your total quiz score is higher than your lowest exam score, then the low exam score will be replaced by the higher quiz score when calculating your final course grade. This means that if you consistently perform well on quizzes, you can drop a single poor semester exam grade (excluding the final exam).

III. Homework: Online homework will be assigned and scored through the Sapling Online Learning System (see Sapling Access instructions at the end of this document). Assignment due dates will be posted to the course BlackBoard site. Additional end-of-chapter review problems (from the required text) may be posted to the course BlackBoard site and their complete solutions can be found in the optional solutions manual (on sale at the bookstore and on reserve in Reeves library).

IV. Learning Activities: Thursday problem session times for this section will be used for group-based learning activities and exam reviews. Absences will be noted and are likely to negatively affect your course performance.

V. Final Exam: This exam will be cumulative, cumulative, will follow the college policy on final exams

(<http://www.moravian.edu/studentLife/handbook/academic/academic.html>), and will be given at 8:30am on Thursday, December 11th in Collier HOSCI 204 (Dana Lecture Hall).

VI. Laboratory: Details are provided in a separate laboratory syllabus.

VII. Important Dates to Note:

Tues. Sept. 2nd – Last Day for Course Changes

Fri. Oct. 3rd – Mid-Term

Fri. Oct. 31st – Last Day to Withdraw from a Course

Tentative Lecture Schedule:

Date	Lecture Topic(s)	Text Reference
Mon. 8/25	Introduction, Measurement	1.1, 1.4
Wed. 8/27	Uncertainty in Measurement, Dimensional Analysis	1.5, 1.6
Fri. 8/29	Classification and Properties of Matter, The Atomic Theory of Matter	1.2, 1.3, 2.1
Mon. 9/1	Atomic Structure, Atomic Weights, Periodic Table	2.2-2.5
Wed. 9/3	Molecules, Molecular Compounds, Ions, Ionic Compounds	2.6, 2.7
Fri. 9/5	Basic Nomenclature, Quiz #1	2.8
Mon. 9/8	Chemical Equations, Reaction Types, Formula Weights	3.1-3.3
Wed. 9/10	Avogadro's Number and The Mole	3.4
Fri. 9/12	Chemical Formulas	3.5
Mon. 9/15	Reaction Stoichiometry, Limiting Reagents	3.6, 3.7
Wed. 9/17	General Properties of Aqueous Solutions	4.1
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Fri. 9/19	EXAM 1 – 7:50am	
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Mon. 9/22	Precipitation Reactions, Acid-Base Reactions	4.2, 4.3
Wed. 9/24	Acid-Base Rxns. (cont.), Oxidation-Reduction Rxns.	4.3, 4.4
Fri. 9/26	Oxidation Numbers, The Activity Series	4.4
Mon. 9/29	Molarity, Dilution Calculations	4.5
Wed. 10/1	Solution Stoichiometry, Titrations, Quiz #2	4.6
Fri. 10/3	Introduction to Thermochemistry, Enthalpy, First Law of Thermodynamics, Enthalpies of Reaction	5.1-5.4
Mon. 10/6	Calorimetry, Hess's Law	5.5, 5.6
Wed. 10/8	Enthalpies of Formation	5.7
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Fri. 10/10	EXAM 2 – 7:50am	
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Mon. 10/13	No Class – Fall Recess	
Wed. 10/15	Wave Nature of Light, Quantization of Energy, Bohr Model of the Atom	6.1-6.3
Fri. 10/17	Wave Behavior of Matter, Quantum Mechanics, Quantum Numbers	6.4-6.6
Mon. 10/20	Multi-Electron Atoms, Electron Configurations, Electron Configurations and The Periodic Table	6.7-6.9
Wed. 10/22	Periodic Properties: Effective Nuclear Charge, Atomic and Ionic Radii, Ionization Energy, Electron Affinity, Quiz #3	7.1-7.5
Fri. 10/24	Metals, Nonmetals, Metalloids, Periodic Group Trends	7.6-7.8

Date	Lecture Topic(s)	Text Reference
Mon. 10/27	Chemical Bonds, Octet Rule, Ionic Bonding	8.1, 8.2
Wed. 10/29	Covalent Bonding, Bond Polarity, Electronegativity	8.3, 8.4
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Fri. 10/31	EXAM 3 – 7:50am	
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Mon. 11/3	Lewis Structures, Formal Charge	8.5
Wed. 11/5	Resonance Structures, Octet Rule Exceptions, Bond Enthalpies	8.6-8.8
Fri. 11/7	VSEPR, Molecular Shapes, Molecular Polarity	9.1-9.3
Mon. 11/10	Valence-Bond Theory, Hybrid Orbitals, Multiple Bonds	9.4-9.6
Wed. 11/12	Gases, Gas Laws, Kinetic-Molecular Theory, Quiz #4	10.1-10.3, 10.7
Fri. 11/14	Ideal-Gas Equation, Applications of Ideal-Gas Equation, Gas Mixtures, Partial Pressures	10.4-10.6
Mon. 11/17	Molecular Effusion and Diffusion, Graham's Law, Deviations from Ideal Behavior	10.8, 10.9
Wed. 11/19	Intermolecular Forces, Liquids, Phase Changes	11.1-11.4
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Fri. 11/21	EXAM 4 – 7:50am	
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Mon. 11/24	Vapor Pressure, Phase Diagrams, Liquid Crystals	11.5-11.7
Wed. 11/26	No Class – Thanksgiving Recess	
Fri. 11/28	No Class – Thanksgiving Recess	
Mon. 12/1	Classification, Structures and General Overview Of Solids	12.1-12.7
Wed. 12/3	Topic(s) t.b.d.	
Fri. 12/5	Topic(s) t.b.d.	
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FINAL EXAM – Thursday, December 11th, 8:30am		
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Tentative Problem Session Schedule:

Date	Topic(s)
Thurs. 8/28	Activity #1
Thurs. 9/4	Activity #2
Thurs. 9/11	Activity #3
Thurs. 9/18	Exam Review
Thurs. 9/25	Activity #4
Thurs. 10/2	Activity #5
Thurs. 10/9	Exam Review
Thurs. 10/16	Activity #6
Thurs. 10/23	Activity #7
Thurs. 10/30	Exam Review
Thurs. 11/6	Activity #8
Thurs. 11/13	Activity #9
Thurs. 11/20	Exam Review
Thurs. 11/27	No Class – Thanksgiving Recess
Thurs. 12/4	Activity #10

Instructions for student access to Sapling Learning for online homework and homework help in this course:

1. Go to <http://saplinglearning.com> and click "US Higher Ed" at the top right
2. (A) If you already have a Sapling Learning account, log in then skip to step 3.
(B) If you have Facebook account, you can use it to quickly create a Sapling Learning account. Click the blue button with the Facebook symbol on it (just to the left of the username field). The form will auto-fill with information from your Facebook account (you may need to log into Facebook in the popup window first). Choose a password and timezone, accept the site policy agreement, and click "Create my new account". You can then skip to step 3.
(C) Otherwise, click "create account". Supply the requested information and click "Create my new account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.
3. Find your course in the list (you may need to expand the subject and term categories) and click the link.
4. Select a payment option and follow the remaining instructions.
5. Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up - and throughout the term - if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor.