CHM 210, **Section 1** | **Spring 2020** | Lecturer: Prof. T. M. Gilbert
MWF 9:00–9:50 AM | Office: LaT (Faraday West) 309
Faraday Hall 143 | Office Phone: 815–753–6896
tgilbert@niu.edu

	Week	Chapter	Topic
1	1/13–1/17	1	Chemistry: The Science of Change
2	**1/20**		**No Lecture; Martin Luther King Jr Day Holiday**
	1/22–1/24	2	Atoms and the Periodic Table
	1/24		**LearnSmart Chapter 1 and Homework Chapter 1 due at 11:59 PM**
3	1/27–1/31	2	Atoms and the Periodic Table
		3	Quantum Theory and the Electronic Structure of Atoms
	1/28		**Online Quiz 1 due at 11:59 PM**
	1/31		**LearnSmart Chapter 2 and Homework Chapter 2 due at 11:59 PM**
4	2/3–2/7	3	Quantum Theory and the Electronic Structure of Atoms
	2/5		**Exam 1 covering Chapters 1–3 with emphasis on Chapters 1–2**
5	2/10–2/14	3	Quantum Theory and the Electronic Structure of Atoms
		4	Periodic Trends of the Elements
	2/11		**Online Quiz 2 due at 11:59 PM**
	2/14		**LearnSmart Chapter 3 and Homework Chapter 3 due at 11:59 PM**
6	2/17–2/21	4	Periodic Trends of the Elements
		5	Ionic and Covalent Compounds
	2/21		**LearnSmart Chapter 4 and Homework Chapter 4 due at 11:59 PM**
7	2/24–2/28	5	Ionic and Covalent Compounds
	2/25		**Online Quiz 3 due at 11:59 PM**
	2/28		**LearnSmart Chapter 5 and Homework Chapter 5 due at 11:59 PM**
8	3/2–3/6	6	Representing Molecules
	3/4		**Exam 2 covering Chapters 1–5 with emphasis on Chapters 3–5**
	3/9–3/13		**No Lectures; Spring Break Holiday**
9	3/16–3/20	6	Representing Molecules
		7	Molecular Geometry, Intermolecular Forces, and Bonding Theories
	3/17		**Online Quiz 4 due at 11:59 PM**
	3/20		**LearnSmart Chapter 6 and Homework Chapter 6 due at 11:59 PM**
10	3/23–3/27	7	Molecular Geometry, Intermolecular Forces, and Bonding Theories
	3/27		**LearnSmart Chapter 7 and Homework Chapter 7 due at 11:59 PM**
11	3/30–4/3	7	Molecular Geometry, Intermolecular Forces, and Bonding Theories
		8	Chemical Reactions
	3/31		**Online Quiz 5 due at 11:59 PM**
	4/3		**LearnSmart Chapter 8 and Homework Chapter 8 due at 11:59 PM**
12	4/6–4/10	8	Chemical Reactions
	4/8		**Exam 3 covering Chapters 0–8 with emphasis on Chapters 6–7**
13	4/13–4/17	9	Chemical Reactions in Aqueous Solution
	4/14		**Online Quiz 6 due at 11:59 PM**
	4/17		**LearnSmart Chapter 9 and Homework Chapter 9 due at 11:59 PM**
14	4/20–4/24	9	Chemical Reactions in Aqueous Solution
		10	Energy Changes in Chemical Reactions
15	4/27–4/29	10	Energy Changes in Chemical Reactions
	5/1		**LearnSmart Chapter 10 and Homework Chapter 10 due at 11:59 PM**
	5/1		**No Lecture; Reading Day**
16	**Wednesday, 5/6, 8:00-9:50 AM**		**Exam 4 covering Chapters 1–10 with emphasis on Chapters 8–10**
			Comprehensive Final Exam covering Chapters 1–10

INFORMATION AND POLICIES

This syllabus is a contract between us. I promise that the exams will be given on the days stated, and that homework assignment and quiz time frames will be announced. **In return, you promise to read the syllabus before asking questions about class procedure.**

Grades: Each student's overall final class grade will be determined as follows. See below for how points are earned in each category.

Best Three Scores of the Four Regular Exams:	300 points maximum
Comprehensive Final Exam Score:	100 points maximum
Online Homework Score	300 points maximum
LearnSmart Modules Score	100 points maximum
Recitation Score including Quizzes	100 points maximum
Total:	900 points maximum

The grading scale will be 90% (810 points or more) = A, 80–89.9% (720–809 points) = B, 70–79.9% (630–719 points) = C, 60–69.9% (540–629 points) = D, <59.9% (539 points) = F. This scale *may* be revised downward slightly. **There will not be a curve**.

Exams: There will be three examinations given during the lecture times within the semester (100 points each, see schedule for dates). A fourth examination (100 points) and a Comprehensive Final examination (100 points) will be given during the Final Examination period. The exams will consist of 25 multiple–choice questions (4 points each), and will be scored by Scantron. To minimize tardiness and the potential for cheating, once any student turns in their Scantron and leaves the examination room, no students will be allowed to enter the examination room to begin the exam. Requests for scoring checks must be made within one week from the day the scores are posted on Blackboard.

The lowest score of the four regular exams will be dropped. This allows students to miss an exam if absolutely necessary, and minimizes the effect of one poor score on the overall grade. Because of this policy, **there will be no makeup exams**. If a student misses an exam without a documented excuse, a score of zero will be assigned for that exam. If a student misses the comprehensive Final Exam without a documented excuse, **the student will receive a grade of F for the course, regardless of their performance on previous exams and other assessments**. The professor will deal with issues affecting a student's ability to attend exams (such as medical problems or athletic events) on a case-by-case basis. His decision is final.

One extra note: any student who earns a score of < 20% (5 out of 25 correct) on the Comprehensive Final Exam **will receive a grade of F for the course, regardless of the student's performance on the previous exams and other assessments**.

Homework: There will be online homework assignments for each chapter in the text using the McGraw-Hill Connect system accessed from BlackBoard (see schedule for due dates/times). Reminders and other assignment details will be announced on BlackBoard. Students will have several days to complete each homework assignment. The chapter homework assignments will consist of 50 multiple choice questions drawn at random from a pool. Students will have the ability to save homework assignments and return to them later (i.e., it isn't necessary to solve all 50 questions in one sitting). While doing homework, students may use any help resource they wish, including other students. Indeed, students are encouraged to solve problems in an interactive group setting. Keep in mind, though, that each student will have different problems to solve, since they are randomly drawn from a pool.

Each question will be worth one point, and will be scored based on a formula related to the number of answer options. Score credit decreases by 25% of the points for each incorrect answer, so each incorrect answer means losing 25%, then 50%, then 75%, then 100% of the points. This forces students to *solve* problems rather than "guess-iterating" through the answers. In determining the overall homework score, the lowest two homework scores will be dropped and the sum of the remaining scores will be scaled on a percentage basis to a 300 point maximum total. This policy allows each student to miss two homework assignments, and lessens the effect of a few poor scores on the overall homework total. Because of this policy, **there will be no makeup homework assignments**.

LearnSmart: There are 10 online LearnSmart modules for CHM 210, each associated with a chapter in the text. According to the publishers, "LearnSmart is an adaptive learning tool that maximizes productivity and identifies the most important learning objectives for each student to master at a given point in time. LearnSmart also knows when students are likely to forget specific information and brings that content back so students can advance the knowledge from their short-term to their long-term memory. The tool is proven to improve academic performance, including higher retention rates and better grades."

For maximum effectiveness, students should begin using LearnSmart before the chapter material is covered in lecture. The modules should be accessed from BlackBoard, where reminders and other assignment details will be announced, and will be available throughout the semester. Points can only be earned before the due dates/times listed (see schedule). Each LearnSmart module is worth 10 points (100 points total). Because the modules are learning tools and not true assessments, **there will be no makeup LearnSmart assignments.** While working with LearnSmart, students may use any help resource they wish, including other students. However, for maximum effectiveness, students should work with LearnSmart by themselves.

Recitation: Each week, students must attend the recitation section assigned when they registered for the course (see schedule below). Recitation will involve problem–solving and discussion of course material. The recitation score (100 points) will be based on attendance (2 points for each of 15 class meetings = 30 points) and on online quizzes (70 points, see below).

Quizzes: Students will take six online quizzes using Connect (see schedule for due dates/times), which will contribute to the recitation score. Reminders and other assignment details will be announced on BlackBoard. Quizzes will become available on BlackBoard approximately 36 hours before the due date/time. In contrast to the online homework, quizzes are to be taken without assistance. Students are on their honor to take quizzes without notes, text, or any resources other than their brains.

Each quiz will last 20 minutes and will consist of 10 questions drawn at random from a pool. Each question will be worth two points, with no opportunities to redo questions. In determining the overall quiz score, the two lowest quiz scores will be dropped and the sum of the remaining four scores will be scaled on a percentage basis to a 70 point maximum total. As with the online homework, this policy allows each student to miss two quizzes, and minimizes the effect of one or two poor scores on the overall quiz total. Because of this policy, **there will be no makeup quizzes**.

STUDY RESOURCES

CHM 210 is a challenging course. There are many resources available to help you succeed – it is *your* responsibility to take advantage of them. Success will require diligent study habits, paying attention to announcements, and attendance at all scheduled lectures and labs. As a general rule of thumb, you should be studying outside of the classroom for *at minimum* 3 hours per week per credit hour, so **9 hours per week**. This does ***not*** include the time you spend doing online assignments.

Text: J. Burdge and J. Overby, "*Chemistry: Atoms First*" 3rd Edition, McGraw-Hill, 2018. Having a Connect/LearnSmart license (see below) gives you access to the text as an e-book. A study guide with solutions is available for additional cost, and students will almost certainly find it useful. Recommended for those students with marginal math backgrounds are: D. M. Goldish, "Basic Mathematics for Beginning Chemistry", 4th Ed, MacMillan, 1990; D. J. Dahm & E. A. Nelson, "Calculations in Chemistry: An Introduction", W. W. Norton, 2012. Copies of both are available from booksellers; copies of Goldish are on reserve in Faraday Library (Faraday Hall 212).

Office Hours: I will hold office hours on Mondays, Wednesdays, and Fridays, from 1:00–1:55 PM. You are welcome to come to my office, which is LaTourette (Faraday West) 309, without an appointment for class assistance during these times. If you can't make it then, you may make an appointment for another time. However, since I have other responsibilities, appointments will be limited. You can contact me by e–mail to ask short, concise questions or for appointments. However, be aware I check my e–mail sporadically, so the turnaround time will probably not be instantaneous.

Blackboard: Relevant class documents such as this syllabus and exam scores will be posted on Blackboard. Useful announcements will also be posted there. In addition, LearnSmart and Connect will be available as part of the McGraw-Hill system implemented with BlackBoard. Thus, you should make certain you know how to access and use BlackBoard.

McGraw-Hill LearnSmart and Connect: You must purchase a license code for McGraw-Hill online assignments. An access code is often bundled with the textbook, or may be purchased online the first time that you open a McGraw-Hill assignment on Blackboard. As stated above, you will have LearnSmart assignments, homework assignments and quizzes available only through McGraw-Hill.

There are no other assignments. However, solving all of the problems at the end of each chapter in the text, *with a time limit*, is good practice for the exams.

Recitation: Each week, you must attend the recitation section assigned when you registered for the course (see schedule below). Recitation will involve problem–solving and discussion of course material. It is your best opportunity to interact directly with the Recitation TA in a classroom environment in order to learn course material.

The Recitation TA for CHM 210 Section 1 will be introduced to you at the first lecture. The TA will inform you of office hours and other aspects of recitation; this information will also be posted on BlackBoard. You should take advantage of the TA's office hours and appointment opportunities.

Weekly Recitation Schedule

R0001	Monday 10:00–10:50 AM	Faraday 205
R0002	Monday 11:00–11:50 AM	Faraday 205
R0003	Monday 1:00–1:50 PM	Faraday 205
R0004	Monday 2:00–2:50 PM	Faraday 205

Free tutoring and resources: The Department of Chemistry & Biochemistry maintains Faraday Hall 247 as a free tutoring room for the benefit of General Chemistry students. It is staffed irregularly (approximately 8:30 AM – 3:30 PM Monday through Friday); look for the schedule sheets posted around the Faraday complex and near the tutoring room. A permanent link to information regarding the tutoring room and schedule is: http://go.niu.edu/chemhelproom.

STUDY RESOURCES (continued)

Chemistry Library: The Department of Chemistry & Biochemistry has a satellite library in Faraday Hall, Room 212. A number of old chemistry texts are available there. These older texts might explain a topic more clearly or provide extra end–of–chapter problems that will help you study for the class. Ask the library staff for help finding them.

Lab (CHM 211) TAs: You may ask your laboratory (CHM 212) TA for assistance in understanding the lecture material. However, you should understand that lab TAs have other responsibilities, and may not accommodate requests instantly **or at all**.

Supplemental Instruction (SI): The NIU ACCESS program provides further assistance with course material through its SI system. If an SI person is available for this section, she/he will offer office hours and help sessions at convenient times, as well as other class assistance at their discretion. Further information on this will be provided if and when available.

Other NIU-based resources: The following university resources may benefit you:
- NIU Office of Student Academic Success: http://www.niu.edu/osas/index.shtml
- NIU Tutoring Centers: http://www.niu.edu/access/tutoringcenters/
- One-on-one tutoring: http://www.niu.edu/access/pal/

Online resources:
There are a number of web sites and You Tube videos devoted to teaching general chemistry. The list below is by no means exhaustive. Using a search engine to find information on specific topics or problem-solving methods is often a good idea.

WebElements: www.webelements.com

Purdue's GenChem site: http://chemed.chem.purdue.edu/genchem/topicreview/index.php

SparkNotes: http://www.sparknotes.com/chemistry/

Ohio State's Molecular viewer and manipulator: https://undergrad-ed.chemistry.ohio-state.edu/jmol-viewer/

Tutoring and resources that aren't free: Names of tutors who charge for their services are available from Linda Davis in Faraday 319 (the Chemistry Department Office).

General Education Course Objectives
- Improve ability to think critically and logically.
- Improve ability to reason quantitatively, to interpret mathematical models, and to perform basic chemical computations.
- Learn how to use the scientific method and theories to understand chemical phenomena.
- Develop an appreciation for the importance of the role of chemistry in everyday life.
- Develop an understanding of the historical development of the field of chemistry.

Content Objectives of CHM 210
- Understand the concepts of matter and energy and the specifics of SI units of measurement.
- Understand atoms and ions and their subatomic components.
- Learn chemical nomenclature, chemical reaction formalisms, and the fundamentals of stoichiometry calculations.
- Develop the ability to predict outcomes of chemical reactions from knowledge of reactants and reaction types.
- Understand the chemical basis for the physical behavior of gases, liquids, and solids.
- Learn the electronic structures of atoms and ions, and understand their relationship to periodic properties and chemical reactivity.
- Correctly predict the shapes of complex molecules and ions, and how they arise from theories of chemical bonding.

NIU Policies

Attendance

Students are expected to comply with the attendance terms described in the Undergraduate Catalog: Academic Regulations: Attendance section. In particular, students should understand that each instructor decides whether to excuse class absences and determines how to permit make-up work. If a student will be absent from classes for a week or more because of an accident, illness, or other emergency, instructors will be notified of the absence only if students or their parents request it through the Division of Student Affairs. Health Services will not release information about students unless they provide a written request. In the case of an absence due to required attendance at a university-sponsored event such as a department trip, performing arts activity, ROTC function, or athletic competition, reasonable attempts shall be made by faculty members to allow the student to make up missed work. Students are responsible for completing the work assigned and/or due on the days they are absent for university-sponsored events. Both the sponsoring unit and the student should inform the faculty member as soon as possible in the semester in order for arrangements to be made for completing missed assignments, examinations or other required course work. The student is required to provide each instructor with an official notification in advance of the absence (e.g., a letter from the chair of the sponsoring department, the head of the sponsoring unit, or the coach).

During classes in the lecture hall and recitation classroom, common courtesy is expected. If you need to arrive late or leave early, do so discretely. Don't engage in activities that interfere with the teaching process or with your fellow students' learning during lecture or recitation. Anyone who violates these basic standards may be asked to leave the lecture hall or recitation classroom.

Academic Integrity and Dishonesty

Students are expected to comply with the academic integrity terms described in the Undergraduate Catalog: Academic Regulations: Academic Integrity section. As applied to CHEM 211, academic dishonesty includes, but is not limited to, looking at or copying work from another student's quiz or exam during a testing session, allowing another student to copy work other than homework, submitting a quiz or homework done, in whole or in part, by someone else, and using unauthorized materials (e.g., lecture notes, crib sheets, textbooks, prohibited electronic devices including pagers, cell phones, headphones, or programmable calculators containing stored equations, formulas, or text) during quizzes or exams. **ACADEMIC DISHONESTY (CHEATING) IN ANY FORM WILL NOT BE TOLERATED.** Violation of any of these terms will result, at minimum, in awarding a score of zero for the assignment in question. Students responsible for, or assisting others in, either cheating on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university.

Students should be aware that a faculty member has original jurisdiction over any instances of academic misconduct that occur in a course the faculty member is teaching. NIU provides an online tutorial on academic integrity. Students are encouraged to take the tutorial, at http://www.niu.edu/ai/students/.

Accommodations for Students with Disabilities

NIU abides by Section 504 of the Rehabilitation Act of 1973, which mandates that reasonable accommodations be provided for qualified students with disabilities. A student who believes that reasonable accommodations with respect to course work or other academic requirements may be appropriate in consideration of a disability must (1) provide the required verification of the disability to the Disabilities Resource Center, (2) meet with the DRC to determine appropriate accommodations, and (3) inform the faculty member in charge of the academic activity of the need for accommodation. Students are encouraged to inform faculty of their requests for accommodations as early as possible in the semester, but must make the requests in a timely enough manner for accommodations to be appropriately considered and reviewed by the university. If contacted by the faculty member, the staff of the DRC will provide advice about accommodations that may be indicated in the particular case. Students who make requests for reasonable accommodations are expected to follow the policies and procedures of the DRC in this process. **In particular, students must provide the faculty with the appropriate paperwork at least seven days in advance of the quiz/exam to which it applies.**

Students with disabilities can obtain a wide range of services, including housing, transportation, adaptation of printed materials, and advocacy with faculty and staff. Students with disabilities who need such services or want more information should contact the Disabilities Resource Center (4th floor of the University Health Services building) at 815-753-1303. In addition, you can access the Accessibility Portal here: http://www.niu.edu/accessibility.