Course Information:

Instructor: Dr. Dominick Casadonte  
Office: Chemistry 226A  
Phone No.: 834-2746  
E-mail: Dominick.Casadonte@ttu.edu  
Office Hours: 1:00-2:00 T, Th  
Discussion Sections: 3:30-5:00, 5:00-6:30 M, T; CHEM 101 (Required; Attendance Taken)  
Web Requirements: OWL Platform (Cengage Publishing; Homework) Learning Catalytics (Pearson Publishing; Discussion Sections)  
Supplies  
• Scientific Calculator (Required)  
• 1307 Course Notes (optional; Barnes and Noble (Campus))  
• "Periodic Table of the Elements"  
• Student Guide for Principles of Modern Chemistry

Course Overview

This course begins a study of the fundamental concepts of chemistry. This course assumes that you have had a previous (high school) chemistry course. It is primarily designed for science and engineering majors. Student who have not had any previous chemistry, with weak high school math and/or chemistry backgrounds, or who are returning to school after a prolonged absence should consider transferring to CHEM 1301, a preparatory course for the quantitative general chemistry sequence. CHEM 1307 focuses on topics including the concepts of atoms, ions, and molecules, chemical equations and stoichiometry, the periodic table and periodic properties, bonding types, atomic structure, basic quantum mechanics, molecular structure and geometry, elementary molecular orbital theory, thermochemistry, gases, intermolecular forces, phase equilibria, liquids and solids, concentration units, reaction types (including redox reactions), and colligative properties. This course has a limited enrollment, and, as such, provides opportunities for direct faculty-student interaction, small group discussion, and hands-on and inquiry-based learning. The Honors section of CHEM 1307 will differ from the regular sections of CHEM 1307 in that it will stress conceptual understanding of the chemical principles covered in the course at an advanced level. Although the workload will not be much different from the non-honors sections, the types of problems considered, homework assigned, and exams given will be at a more advanced level.
This course fulfills 3 credit hours of the 6 SCH natural sciences core education requirement. The companion laboratory class, CHEM 1107, satisfies 1 SCH of the 2 SCH Texas Tech University science laboratory graduation requirement. The objective of the study of the natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The natural sciences investigate the phenomena of the physical world. Students graduating from Texas Tech University should be able to explain some of the major concepts in the natural sciences and demonstrate an understanding of scientific approaches to problem solving, including ethics.

Assessment of student learning will be accomplished through multiple-choice lecture exams, weekly quizzes, on-line homework, and team-based essays and in-class and small group discussions based on topics developed from case studies or course material related to ethics, as described below. This course is recommended for students who plan careers in chemistry or in the physical and biological sciences, as well as in medicine or engineering. If you are in doubt about your chemistry background, check with the instructor immediately.

This course will be conducted in a “flipped” or time-shifted manner. That is, instead of a lecture-homework format, you will be required to watch a lecture (from 20 – 60 minutes) before coming to class, and then answer questions on OWL. The lecture and class notes are available on Blackboard. A hard copy of all of the lecture notes is also available at TTU Barnes and Nobles. In class we will work problems from the book, answer questions, clear up muddy points, go over sample quiz problems, etc. Thus, your homework is to watch the lecture, and during lecture time we will work advanced problems and develop fundamental concepts. The required discussion section will focus on material that is relevant to the quiz (which will be given during the discussion section), as well as communication and team building skills.

There is, in addition to the lecture, a REQUIRED non-credit discussion section on either Monday or Tuesday from 3:30 – 5:00 or 5:00 – 6:30. Attendance will be taken!

Expected Learning Outcomes for CHEM 1307-H01

After completing this course, the fully successful student will be able to:

1) Use dimensional analysis with attention to units and significant figures.
2) Manipulate chemical reactions quantitatively using the mole concept.
3) Determine empirical and molecular formulas from empirical data.
4) Balance chemical equations and use stoichiometric relationships to calculate product and reactant amounts.
5) Name and classify ionic compounds, binary acids, and oxoacids.
6) Apply the results of elementary quantum mechanics in the determination of wave characteristics, electronic configurations, electronic transitions, hybridization, and bonding types.
7) Construct molecules with appropriate molecular geometries dictated by VSEPR theory.
8) Understand the basis for molecular orbital and valence bond theory and be able to construct molecular orbital diagrams for diatomic molecules.
9) Evaluate the relative efficacy, advantages, and disadvantages of hybridization and molecular orbital theory with regard to bonding and molecular structure.
10) Realize the role of energy and enthalpy in driving chemical reactions.
11) Differentiate between the states of matter on a physical and chemical basis and phase transitions at the molecular level.
12) Rationalize the behavior of various states of matter on the basis of kinetic molecular theory.
13) Explain the basis for and various types of intermolecular attractive forces.
14) Compute and utilize various solution concentration units.
15) Conceptualize the physical and molecular nature of solutions.
16) Determine solution characteristics using colligative properties.

The life and physical sciences investigate the phenomena of the physical world. This course satisfies the requirements for the Life and Physical Sciences component of the general education requirement as stated on pages 47-48 of the 2016-2017 student catalog, in that learning outcomes 1-5, 7, 9, 10, 11, 13, and 15 will help enable the fully successful student to understand, construct, and evaluate relationships in the natural sciences. Learning outcomes 1-3, 6, 8, 9, 11, 12, and 13, 15, and 16 will also enable the student to understand the basis for building and testing theories. More specifically, the relationship of the learning outcomes to the Texas Higher Education Coordinating Board Objectives, College Level Competency Objective, and Student Learning Objectives is summarized in the table below.

<table>
<thead>
<tr>
<th>Coordinating Board Objectives:</th>
<th>Learning Outcomes (Described Above)</th>
<th>Outcomes Assessments (Described Below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>1-16</td>
<td>A, B, C, D</td>
</tr>
<tr>
<td>2) Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication.</td>
<td>1, 2, 4, 5, 7, 9-15</td>
<td>A, B, D, E, F</td>
</tr>
<tr>
<td>3) Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>1-16</td>
<td>A, B, C</td>
</tr>
<tr>
<td>4) Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.</td>
<td>1-16</td>
<td>A, B, D, E, F</td>
</tr>
</tbody>
</table>

**College Level Competency Objective:**

Students graduating from Texas Tech University should be able to explain some of the major concepts in the Natural Sciences and to demonstrate an understanding of scientific approaches to problem solving, including ethics.

<table>
<thead>
<tr>
<th>TTU Student Learning Objectives:</th>
<th>Learning Outcomes (Described Above)</th>
<th>Outcomes Assessments (Described Below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Demonstrate knowledge of the scientific method and to contrast it with other ways of understanding the world.</td>
<td>1, 6, 8-10, 12</td>
<td>A, B, C, D</td>
</tr>
<tr>
<td>2) Demonstrate knowledge of the tools and methods used by scientists to study the natural world.</td>
<td>1, 6-10, 12</td>
<td>A, B, C, D</td>
</tr>
<tr>
<td>3) Explain some of the major theories in the Natural Sciences.</td>
<td>1, 6-10, 12, 13, 16</td>
<td>A, B, C, D</td>
</tr>
<tr>
<td>4) Describe how Natural Sciences research informs societal issues, including ethics.</td>
<td>6, 9, 12, 14, 16</td>
<td>A, B, C, D</td>
</tr>
</tbody>
</table>
General Outcomes Assessment

There will be five aspects to the assessment of this course:

A. Short Quizzes (100 points total): These will be given during the Discussion Sections (except during exam weeks) or as 20 point take-home or internet-based quizzes. Any material up to the prior lecture is fair game (including material you’ve already been tested on!). Only the best 5 (worth 20 points each) will be kept out of 7 given. The purpose of these quizzes is to encourage you to review before the hour exams and to keep current with all past material. Formats will vary, and may include group work! The short quizzes will assess items 1) and 3) of the Coordinating Board objectives, the college-level competency objective, items 1), 2), and 3) of the TTU student learning objectives, and the instructor’s expected learning outcomes, as described above.

*In order to encourage you to do the assigned homework, at least two quiz questions each week will be based on or taken directly from the homework list or OWL questions. Homework will be worked during class time. Free-response exam questions will be at the same level of difficulty as the homework in the book.*

B. Homework (150 points total): Homework through OWL will be assigned for each lecture. Homework sets will consist of 2-15 questions (depending on the complexity of material) that will need to be answered before coming to the next class after the homework is due. The homework will be worth more than 150 points total. Note that this homework is NOT the homework assigned as end-of chapter problems (which will be worked in class), but rather are “warm up” problems, so that I have a sense that you have watched the lecture before coming to class. Any points obtained beyond 150 points will be added as extra credit. The homework will assess items 1) and 3) of the Coordinating Board objectives, the college-level competency objective, and items 1), 2), and 3) of the TTU student learning objectives, and the instructor’s expected learning outcomes, as described above.

*There are “Stop Signs” in the lectures and lecture notes. These indicate shorter sections that may have 1-3 OWL questions to answer concerning the material just covered. You have the option of watching the lectures and working the OWL problems as though the lectures were composed of many smaller lectures, or you can wait until the end of each lecture (pausing or not as you go) before answering any of the OWL problems.*

C. Exams (300 points total): There will be three exams worth 100 points each plus an American Chemical Society nationally normed end-of term exam given (pre-/post-test; NOTE: The post-test date may be rescheduled, depending upon lab final times). The class exams will be given on Wednesday evenings from 7:00-8:30 PM., and will consist of approximately 15 multiple-choice questions and a variety of free response questions or problems. The exams will assess items 1) and 3) of the Coordinating Board objectives, the college-level competency objective, and items 1), 2), and 3) of the TTU student learning objectives, and the instructor’s expected learning outcomes, as described above.
ACS End-of-Term Exam Pre-Test  Wed., August 31st, 7:00-9:00 PM, CHEM 113
Exam I  Wed., September 21, 7:00-8:30 PM, CHEM 113
Exam II  Wed., October 19, 7:00-8:30 PM, CHEM 113
Exam III  Wed., November 16, 7:00-8:30 PM, CHEM 113
ACS End-of-Term Exam Post-Test  Wed., December 7, 7:00-9:00 PM, CHEM 113
Final Exam  Tues., December 13, 7:30-10:00 PM, CHEM 113

You are responsible for all material presented in lecture or assigned in the text. Exam questions are generally at the same level of difficulty as the homework and quizzes, and always stress fundamental concepts and problem-solving skills rather than memorization of detail. You will be allowed a "data card" of 3 x 5 in. for each exam.

Final Exam (200 points total): The final exam is scheduled for Tuesday, December 13, 7:30-10:00 PM. It will consist of approximately 30 multiple-choice questions and free response questions and it will be comprehensive. Department-developed imbedded questions on the final exams may be used as an additional tool to allow the department to track student performance in relation to the learning objectives indicated above. You will be allowed a "data card" of 5.5 x 8.5 in. for the final.

D. ACS End-of-Term Exam Post-Test: The purpose of the American Chemical Society (ACS) end-of-term exam is to provide an independent (i.e., non-instructor prepared), nationally normed outcomes assessment related to items 1) and 3) of the Coordinating Board objectives, the college-level competency objective, and items 1), 2), and 3) of the TTU student learning objectives, and the instructor’s expected learning outcomes, as described above. It is expected that the fully successful student will score at least at the 50% percentile on the ACS end-of-term post-test. Anyone scoring at or above the 90th percentile on the ACS End-of-Term post-test exam and successfully meeting the requirements for communication and teamwork (objectives 2 and 4 of the Coordinating Board objectives; described below) will receive an "A" in the course, and will not have to take the final exam. For everyone else, if and only if you take the pre- and post-test, your percentile rank on the post-test will be divided by 10 and added to your point total as extra credit. For example, if you score at the 40th percentile, I will add 4 points as extra credit. (I will round to the nearest 10’s place. Thus, a 36th percentile score will receive 4 points, while a 22nd percentile will receive 2 points.

E. Team-Based Essays (50 points): The ability to work in teams and the ability to communicate both accurately and effectively are vital skills in a world where the scientific problems are increasing complex. In order to help develop teamwork skills, the class will be broken down into 10-12 working groups of 4-5 students each. Twice during the semester, case studies and ethical situations will be presented to highlight real-world applications and possibilities related to the chemistry topics discussed in this course. Each team will have a week to discuss the topic. At the end of the week, each team will produce a position paper of no less than three pages and no more than five pages, double-spaced. A grading rubric will be provided for each paper. Each paper (there will be two assignments) will be graded on the basis of 25 points, for a total of 50 points. Part of the score for each paper will be based on the relative discussions of the team, as reported in the paper.
Specific Natural Science Core Curriculum Learning Outcomes and Methods for Assessment

Students are expected to gain experience in developing the following learning tools:

1. **Critical Thinking Skills** (Coordinating Board Objective): Lecture/Class Time: Students will gain critical thinking skills by evaluating the content of the lectures (pre-recorded) and through discussion of content, cleaning up of muddy points and working sample problems during class time.

   **Methods for Assessment:** Exams 1-3, OWL Homework, Class Discussion, Team-Based Essays, Discussion and Summary Papers, Final Exam, Discussion during discussion sections.

2. **Communication Skills** (Coordinating Board Objective): Class Time/Discussion Sections: Students develop oral communication skills through in-class and small group discussion of controversial or ethical issues related to the chemistry topics in the course during both class time and in the discussion sections, including discussion postings on blackboard. Written communication skills will be developed through the team-based essays and the summary papers.

   **Methods for Assessment:** Discussion postings, team-based essays and the summary papers.

3. **Empirical and Quantitative Skills** (Coordinating Board Objective): Class Time/Discussion Sections: Students will reinforce empirical and quantitative skills by working the OWL homework, participating in class-time homework solution, and by in-depth discussion during the discussion sections.

   **Methods for Assessment:** Exams 1-3, OWL Homework, Class Discussion, Final Exam.

4. **Teamwork** (Coordinating Board Objective): Class Time/Discussion Sections: Strategies such as think-pair-share, cleaning up of muddy points, discussion of misconceptions, and discussion of controversial issues related to either ethical or scientific aspects of case studies or topical issues will stimulate small group discussion.

   **Methods for Assessment:** Discussion postings, team-based essays, discussion and summary papers.

5. **Knowledge of Some of the Major Concepts in the Natural Sciences and Demonstration an Understanding of Scientific Approaches to Problem Solving, Including Ethics** (College Level Competency Objective): Lecture/Class Time/Discussion Sections: Major concepts, theories and laws concerning thermodynamics (e.g., what is the difference between and scientific theory and a law), quantum theory, bonding types, molecular geometry, molecular orbital theory, kinetic-molecular theory, and intermolecular forces are discussed in lecture and through lecture exam questions. Problem solving approaches will be discussed through in-class and discussion-based homework solutions, as well as in the discussion involved in the team-based essays, discussion and summary papers.

   **Methods for Assessment:** Exams 1-3, OWL Homework, Class Discussion, Discussion postings, team-based essays, discussion and summary papers, and Final Exam.

6. **Knowledge of the Scientific Method** (TTU Student Learning Objective): Class Time/Discussion Sections: Students will be exposed to historical and current information gathering methods related to concerning thermodynamics (e.g., what is the difference between
and scientific theory and a law), quantum theory, bonding types, molecular geometry, molecular orbital theory, kinetic-molecular theory, and intermolecular forces. Discussion will not only include the scientific method as a way of understanding the world (for example, in the discussion of the electrochemical refining of aluminum), but also the limits of the scientific method.

**Methods for Assessment:** Discussion postings, team-based essays, discussion and summary papers.

7. **Knowledge of Tools and Methods of Scientific Inquiry** (TTU Student Learning Objective): Lecture/Class Time/Discussion Sections: Technologies and methodologies related to the performance of the chemistry indicated in the course will be discussed, both historical (e.g., the development of atomic theory) as well as topical (alternative renewable energy, battery technology, etc.).

**Methods for Assessment:** Exams 1-3, OWL Homework, Class Discussion, Final Exam.

8. **Explain some of the Major Theories in Natural Sciences** (TTU Student Learning Objective): Lecture/Class Time/Discussion Sections: Major theories and laws concerning thermodynamics (e.g., what is the difference between and scientific theory and a law), quantum theory, bonding types, molecular geometry, molecular orbital theory, and kinetic-molecular theory, and intermolecular forces are discussed in lecture and through lecture exam questions.

**Methods for Assessment:** Exams 1-3, OWL Homework, Class Discussion, Final Exam.

9. **The Impact of Natural Sciences on Social Issues** (TTU Student Learning Objective): Lecture/Class Time/Discussion Sections: In order to integrate the concepts learned in the Natural Sciences, and specifically chemistry to societal issues, students are required to read current and controversial topics as assigned by the instructor as part of the team-based essay and discussion and summary paper requirements. Students formulate responses via the discussion board and in their essays, paying particular attention to the ethical consequences related to the societal issues.

**Methods for Assessment:** Discussion postings, team-based essays, discussion and summary papers.

**Summary of General Outcomes Assessment**

The course is graded based on the total number of points point earned through the various assessment mechanisms. The table below summarized the values for each of the assessments, as well as the grading scale.

<table>
<thead>
<tr>
<th>Outcome Assessment</th>
<th>Maximum Score</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>100 points</td>
<td>90-100% A</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100 points</td>
<td>80-89.9%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>100 points</td>
<td>70-79.9% C</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200 points</td>
<td>60-69.9% D</td>
</tr>
<tr>
<td>Quizzes</td>
<td>100 points</td>
<td>&lt; 60% F</td>
</tr>
<tr>
<td>OWL Homework</td>
<td>150 points</td>
<td></td>
</tr>
<tr>
<td>Team-Based Essays (25 pts x 2)</td>
<td>50 points</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>800 points</strong></td>
<td></td>
</tr>
</tbody>
</table>
Criteria for Grade Determination

The intent is to provide no curve in the course. Course grades will be determined based on the percentage of material mastered as determined by the OWL homework, weekly quizzes, three hourly exams, final exam, team-based essays, and discussion and summary papers. The total number of points is 800. Thus, as a rough guideline, 90% (720 points) and above is expected to be an A, 80-89.9% a B, 70-79.9% a C, and 60-69.9% a D, and any overall score below 60% will receive a grade of F.

Extra Credit Philosophy in an Honors Course:

I believe that while there are many reasons why a student would attend an honors section of a course, there are two prevailing concepts of how an honors class should be taught: 1) it should be a class with relatively low numbers that provides extra attention without fundamentally much more work on the part of the student but which allows and encourages students to do well, or 2) it should be a class which challenges the best and the brightest students in the field. Let me call (1) the "enrichment" philosophy and (2) the "challenge" philosophy. These two philosophies have often come into conflict, especially in the sciences. It is my intention in this class to attempt to provide both enrichment and challenge opportunities without making the class onerous. This will be done by a series of extra credit questions on the quizzes and exams, as well as by two extra credit quizzes. Specifically:

1) Two optional short quizzes (worth 20 points each) will be given, one around midterm and the other toward the end of the semester. They will be of the same level of difficulty as a regular quiz. The points from these quizzes will be added on to your final point total at the end of the semester.

2) Some of the regular quizzes will have a five point optional extra credit "challenge problem" which will be more difficult than the standard quiz question. These challenge problems may also be internet-based.

3) Each hour exam will have one 5 pt. "extra credit" question and one 5 pt. "challenge" question, following the formats given above. The final exam will have one of each worth 10 pts. In addition, anyone scoring at or above the 90th percentile on the ACS End-of-Term Post-Test exam will receive an "A" in the course, and will not have to take the final exam.

Note that the total number of points for the course (excluding extra credit) is 800 points. Since extra credit exists as indicated in this syllabus, it is possible to score above 100% in this course!

Additional Course Information

PLEASE NOTE: You must notify the instructor in advance if illness or other unavoidable circumstances will prevent you from taking an examination at the scheduled time. THERE WILL BE NO MAKEUP EXAMS! Except in unusual circumstances, grades will be prorated based on your performance on the other exams.
**Homework:** The recommended end-of-chapter homework assignments for each of the chapters that will be covered are shown on the course content handout. End-of chapter homework will not be collected or graded, but the OWL homework will be graded. Answers to the end-of-chapter problems are to be found in the back of your text. Many of the answers to the problems are also worked in the Students Solutions Manual that may be purchased to accompany your text. You should attempt to work all of the homework questions, as variations of these problems will appear on short quizzes and hour exams.

**Attendance:** You are expected and encouraged to attend lectures. You are responsible (even if you miss lecture) for all assignments, announcements, and course changes that are made.

**Laboratory:** The laboratory that accompanies this course is entirely separate and is graded independently. The course number is CHEM 1107. If you drop CHEM 1307 during the drop/add period you must drop CHEM 1107 as well.

**Cheating:** Academic dishonesty will NOT be tolerated in this course. Cheating in any form will be treated according to the rules enumerated in the student handbook (pg. 42). It is your responsibility to be familiar with these rules.

**Help Resources:** Office hours will be offered weekly in addition to the discussion sections to help you review the material. Please do not wait until the last minute to get help! Come in with questions during office hours or discussion sections and see the instructor when a concept or problem gives you difficulty. A teaching assistant is on duty in the help room (CHEM 109) for additional aid. Students who wish additional help involving study skills, time management, exam anxiety, and other academically related issues are encouraged to consult room 205 in West Hall.

**Civility In The Classroom**

“Students are expected to assist in maintaining a classroom environment that is conducive to learning. To ensure that all students have the opportunity to gain from time spent in class, faculty members are encouraged to include a statement in their course syllabi relating to behavioral expectations in the classroom.” (Texas Tech University Catalog, p. 41).

Polite behavior is expected. Out of respect for your instructor as well as the other class members, please arrive on time and avoid interrupting the class by turning off all cell phones and beepers. If you must take a call, please quietly leave and return after the call.

**Disability Accommodation**

“The University is committed to the principle that in no aspect of its programs shall there be differences in the treatment of persons because of race, creed, national origin, age, sex, or disability, and that equal opportunity and access to facilities shall be available to all.”

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services.
during the instructor’s office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

**Additional Attendance Statements**

*Absence due to religious observance:* “A student shall be excused from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.” (Texas Tech University Catalog, p. 41)

*Absence due to officially approved trips:* “Department chairpersons, directors, or others responsible for a student representing the university on officially approved trips should notify the student’s instructors of the departure and return schedules in advance of the trip. The instructor so notified must not penalize the student, although the student is responsible for material missed. Students absent because of university business must be given the same privileges as other students (e.g., if other students are given the choice of dropping one of four tests, then students with excused absences must be given the same privilege). (Texas Tech University Catalog, p. 40).
## II. Course Outline

<table>
<thead>
<tr>
<th>Approx. Dates</th>
<th>Lecture</th>
<th>Topic</th>
<th>Chapter</th>
<th>Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 30</td>
<td>---</td>
<td>Intro to Course</td>
<td>--------</td>
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</tr>
<tr>
<td>Aug. 31</td>
<td></td>
<td>ACS Pre-Test</td>
<td></td>
<td>7:00 - 9:00 pm</td>
</tr>
<tr>
<td>Sept. 1</td>
<td>1</td>
<td>(SI Units, Sig. Fig.)</td>
<td>--------</td>
<td>In Class</td>
</tr>
<tr>
<td>Sept. 6 (Quiz In class)</td>
<td>2</td>
<td>Combining Laws Atomic Composition</td>
<td>1</td>
<td>5, 9, 11, 13</td>
</tr>
<tr>
<td>Sept. 8</td>
<td>3</td>
<td>Isotopes</td>
<td>1</td>
<td>17,19</td>
</tr>
<tr>
<td>Sept. 13 (Q2)</td>
<td>4</td>
<td>The Mole Empirical Formulas</td>
<td>1&amp; 2</td>
<td>1: 29, 31, 36</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2: 7, 13, 15, 17</td>
</tr>
<tr>
<td>Sept. 15</td>
<td>5</td>
<td>Chemical Equations Stoichiometry</td>
<td>2</td>
<td>19, 23, 27, 31, 35, 37</td>
</tr>
<tr>
<td>Sept. 20 (REV)</td>
<td>6</td>
<td>The Periodic Table Ionization Energy Electron Affinity Electronegativity</td>
<td>3</td>
<td>1, 9, 13, 15</td>
</tr>
<tr>
<td>Sept. 21 (Wednesday)</td>
<td></td>
<td>Hour Exam I (Chapters 1-2)</td>
<td></td>
<td>7:00 - 8:30 pm</td>
</tr>
<tr>
<td>Sept. 12</td>
<td>7</td>
<td>Coulomb Stabilization Bond Energies Inorganic Nomenclature</td>
<td>3</td>
<td>25, 31, 33, 35, 73, 75, 77, 79, 81, 83</td>
</tr>
<tr>
<td>Sept. 27 (Q3)</td>
<td>8</td>
<td>Lewis Structures Formal Charge Resonance</td>
<td>3</td>
<td>39, 43, 45, 51, 53, 55, 57</td>
</tr>
<tr>
<td>Sept. 29</td>
<td>9</td>
<td>Molecular Geometry</td>
<td>3</td>
<td>59, 61, 65, 67</td>
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<tr>
<td>Oct. 4 (Q4)</td>
<td>10</td>
<td>Oxidation-Reduction</td>
<td>3</td>
<td>71</td>
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<tr>
<td>Date</td>
<td>Week</td>
<td>Topic</td>
<td>Textbook Sections</td>
<td></td>
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<tr>
<td>Oct. 6</td>
<td>11</td>
<td>Introduction To Quantum Mechanics</td>
<td>3, 5, 7, 9, 13, 15</td>
<td></td>
</tr>
<tr>
<td>Oct. 11(Q 5)</td>
<td>12</td>
<td>The Bohr Atom De Broglie Wavelength</td>
<td>19, 25, 31, 36, 49, 53</td>
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<tr>
<td>Oct. 13</td>
<td>13</td>
<td>Atomic Structure I</td>
<td>1, 3</td>
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<td>Oct. 18 (REV)</td>
<td>14</td>
<td>Atomic Structure II</td>
<td>17, 19, 21, 23, 33, 35, 39, 41</td>
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</table>

**Oct. 19 (Wednesday)**

**Hour Exam II**
(Chapters 3, 4, First Part of 5) 7:00 - 8:30 pm

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topic</th>
<th>Textbook Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 20</td>
<td>15</td>
<td>Molecular Orbital Theory</td>
<td>17, 21</td>
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<tr>
<td>Oct. 25(EC1)</td>
<td>16</td>
<td>Heteronuclear Diatomics Hybridization</td>
<td>27, 51, 55, 68, 70</td>
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<tr>
<td>Oct. 27</td>
<td>17</td>
<td>Introduction to Thermodynamics</td>
<td>5, 11, 15, 19</td>
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<td>Nov. 1 (Q6)</td>
<td>18</td>
<td>Thermochemical Equations Enthalpy</td>
<td>27, 31</td>
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<tr>
<td>Nov. 3</td>
<td>19</td>
<td>Hess’s Law</td>
<td>35, 39, 41, 49</td>
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<td>Nov. 8 (Q7)</td>
<td>20</td>
<td>Gasses and The Ideal Gas Law</td>
<td>5, 11, 17, 19, 21, 29</td>
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<tr>
<td>Nov. 10</td>
<td>21</td>
<td>Dalton’s Law Kinetic Molecular Theory</td>
<td>35, 37, 43, 49, 51</td>
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<td>Nov. 15 (REV)</td>
<td>22</td>
<td>Intermolecular Forces</td>
<td>15, 17, 21, 23, 27</td>
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</table>

**Nov. 16 (Wednesday)**

**Hour Exam III**
(Chapters Remainder of 5; 6, 12, 9) 7:00 - 8:30 pm

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topic</th>
<th>Textbook Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 17</td>
<td>23</td>
<td>Phase Equilibria</td>
<td>31, 37, 39, 43, 45, 49</td>
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Nov. 22 (EC2)  24  Concentration Units  11  1, 3, 5, 11
Nov. 29 (REV 1)  25  Ionic Equations  11  13, 15, 27, 31, 33
Redox Equations
Dec. 1 (REV 2)  26  Colligative Properties  11  43, 47, 51, 53, 57
Dec. 6  ---  Review or Catch Up  ---

Dec. 7 (Wednesday)  ACS Post-Test  7:00 - 9:00 pm

Dec. 13  FINAL EXAM  (Cumulative)  7:30 - 10:00 pm

IMPORTANT DATES:

September 1 (Thursday)  Last day for student-initiated course addition
September 14 (Wednesday)  Last day to drop on MyTech without penalty
September 14 (Wednesday)  Last day to drop a course/full refund
September 26 (Monday)  Last day to withdraw/partial refund
October 24 (Monday)  Mid-semester reports due
October 31 (Monday)  Last day to drop on MyTech with penalty
November 3 (Thursday)  Advanced Registration Open
November 22 (Tuesday)  Open Registration
November 23-27 (Wed - Sun)  Thanksgiving Holiday
December 2-December 8 (Fri-Thurs)  Period of No Exams
December 2 (Friday)  Last day to withdraw from the university
December 7 (Wednesday)  Last day of Fall Semester classes
December 8 (Thursday)  Individual Study Day
December 9-14 (Fri - Wed)  Final Exams
December 16-17 (Fri -Sat)  Commencement