Chemistry 1711 / 1811 (5.0 cr) Syllabus Fall 2014

Instructors:  
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Office Hours:  
Instructors will announce scheduled office hours in class. Additionally, office hours will be posted at the faculty member's office, and on their University web page and/or Moodle page.

Class Meetings:  
Regular meetings for this course include 3 lecture periods (50 min each), 1 recitation period (50 min), and 1 lab period (165 min) per week. The specific details of meeting days, times, and rooms for your section can be found under the Dynamic Course Offerings link on the Registrar's web page:  
http://www.onu.edu/administration/registrars_office

Course Description:  
This course will focus on macroscopic concepts of the elements, compounds and reactions. Stoichiometry, thermochemistry and properties of ideal gases as applied to reactive systems will be discussed. Emphasis will be placed on acid-base, redox, and descriptive chemistry. Additionally we will discuss atomic theory and its application to bonding. The laboratory portion of the course supports the principles presented in lecture, including spectroscopy.

Required Texts and Materials:  
General Chemistry, Ebbing and Gammon, 10th ed., Houghton-Mifflin (2012); a softcover version of the text book will be available at the bookstore (ISBN: 978-1-305-03453-2) registration with Sapling Learning (saplinglearning.com or through bookstore) to access for-credit, online homework assignments  
audience response device (>clicker 2)  
Darling model kit, grid-lined lab notebook, and non-programmable scientific calculator

Chapters Covered:  
1. Chemistry and Measurement  
2. Atoms, Molecules, and Ions  
3. Calculations with Chemical Formulas and Equations  
4. Chemical Reactions  
5. The Gaseous State  
6. Thermochemistry  
7. Quantum Theory of the Atom  
8. Electron Configurations and Periodicity  
9. Ionic and Covalent Bonding  
10. Molecular Geometry and Chemical Bonding Theory  
23 and 24. (selected topics)

Grading:  

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<tr>
<th>Activity</th>
<th>% of Total</th>
<th>Letter</th>
<th>% Range</th>
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<tbody>
<tr>
<td>6 of 8 Quizzes</td>
<td>15 %</td>
<td>A</td>
<td>89 - 100 %</td>
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<tr>
<td>Exam 1 (9/25/14)</td>
<td>12 %</td>
<td>B</td>
<td>79 - 88 %</td>
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<tr>
<td>Exam 2 (10/30/14)</td>
<td>15 %</td>
<td>C</td>
<td>65 - 78 %</td>
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<td>Exam 3 (12/4/14)</td>
<td>15 %</td>
<td>D</td>
<td>50 - 64 %</td>
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<tr>
<td>Laboratory</td>
<td>10 %</td>
<td>F</td>
<td>&lt; 50 %</td>
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<tr>
<td>Homework</td>
<td>8 %</td>
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<td>Class Participation</td>
<td>5 %</td>
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<td>Final Exam (12/18/14; 7-9 pm)</td>
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Assignments:  
Prepare for each class and lab by reading ahead. Prepare for quizzes and exams by completing all assigned homework problems. Online homework assignments will be graded and count toward your overall grade. Additional problems from the book may be assigned, but these will not be collected or graded. You are expected to seek help from your instructor when you have difficulty. Plan to read and do chemistry homework daily. Expect to learn and apply concepts rather than simply memorizing

Testing:  
Each instructor will designate one meeting period approximately weekly for review and quizzes. Quizzes will have a 30-minute time limit. Hour exams will be administered on Thursday evenings at 7 PM (see dates below). A student may be excused from a scheduled exam time due to serious illness, emergency, or conflict with an authorized ONU function if the instructor is notified in advance; exams must then be completed within the next three days. Per departmental policy, exams will never be administered early. Exam room assignments will be announced in class. All exams are cumulative. Unless otherwise noted by your instructor, your class will not meet on the remaining Thursday evening periods.
Attendance: Attend lectures and labs regularly and be on time; frequent absences will bring down a borderline performance. *No make-up quizzes will be administered for any reason*, so a missed quiz will be one of those dropped. However, if a student misses two or more regular quizzes, (s)he may earn replacement credit for one quiz score by completing a common, comprehensive replacement test during the last week of classes.

A lab may only be made up during the same week; you must arrange this with another lab instructor. A missed lab will earn a score of 0, and **more than two unexcused absences from the lab will result in a failing grade for the course**. In case of serious illness, emergency, or conflict with an *authorized University function*, please contact your instructor as soon as the conflict is known.

Learning Objectives: After the successful completion of the 2-semester General Chemistry sequence at ONU (*Chem 1711 & 1721 or Chem 1811 & 1821*), a student should:

- be an informed, scientifically-literate individual
- have an improved understanding of the impact chemistry has on their everyday life
- have refined their problem solving and analytical reasoning skills
- have a general understanding of the anchoring concepts for general chemistry as described by the American Chemical Society Exams Institute (*J. Chem. Educ. 2012, 89, 721-723.*)

1. Matter consists of atoms that have internal structures that dictate their chemical and physical behavior.
2. Bonding: atoms interact via electrostatic forces to form chemical bonds.
3. Structure and Function: Chemical compounds have geometric structures that influence their chemical and physical behaviors.
4. Intermolecular Interactions: Intermolecular forces - electrostatic forces between molecules - dictate the physical behavior of matter.
5. Chemical Reactions: Matter changes, forming products that have new chemical and physical properties.
6. Energy and Thermodynamics: Energy is the key currency of chemical reactions in molecular scale systems as well as macroscopic systems.
7. Kinetics: Chemical changes have a time scale over which they occur.
8. Equilibrium: All chemical changes are, in principle, reversible; chemical processes often reach a state of dynamic equilibrium.
9. Experiments, Measurement, and Data: Chemistry is generally advanced via experimental observations.
10. Visualization: Chemistry constructs meaning interchangeably at the particulate and macroscopic levels.

Integrity: The University expects its students to conduct themselves in a dignified and honorable manner as mature members of the academic community and assumes that individually and collectively they will discourage acts of academic dishonesty. The University also expects cooperation among administrators, faculty, staff, and students in preventing acts of academic dishonesty, in detecting such acts, reporting them, and identifying those who commit them, and in providing appropriate punishment for offenders. The University Code of Academic Student Conduct is found in Appendix C of the Student Handbook:

http://www.onu.edu/student_life/student_conduct/student_handbook

The specific penalty for a violation of the University Code of Academic Student Conduct will be determined by the General Chemistry instructors, but *at a minimum*, the student will earn a score of 0 for the assignment involved in the infraction.

Accommodation Policy: Students requiring particular accommodations because of physical and/or learning disabilities should contact their Dean’s office prior to or during the first week of classes. For additional information, see:

http://www.onu.edu/student_life/disability_services

General Education Information: This course has been tagged to fulfill the general education requirement for scientific literacy. See the Chem 1711 Laboratory Schedule for details on artifact required.