

**Chemistry 111**  
**Foundations of Chemistry**  
**Spring 2015**

**Instructor:** Dr. Hasan El-Rifai

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**Prerequisite:** Undergraduate level MTH 127 Minimum Grade of C or ACT Math 21 or Placement Chemistry 111 or SAT Mathematics 500 or Undergraduate level MTH 130 Minimum Grade of C .

**Overview:** This 3 credit course will provide you with many of the basics of a first semester, college chemistry course. Topics will include units, dimensional analysis, nomenclature, solutions, atomic structure, stoichiometry, Lewis dot structures, solution chemistry, etc. It is intended to prepare students for CHM 211. Exactly how many chapters of the text will be covered is dependent on how much time we spend on each chapter.

**Lecture Time:** R: 7:30 pm - 9:50 pm. Hurricane High School

**Office Hours:** After lecture time.

**Required Text:** "General Chemistry as a Second language" by David Kline. ISBN: 0-471-71662-6.

**Course Learning Outcomes:**

Upon completion of this course the student will be able to . . .

1. Demonstrate the use of metric and English conversions factors. Be able to perform calculations using the factor-label method. Be able to solve problems using density and specific gravity.
2. Demonstrate a clear understanding of the concepts of elements, atoms, molecules, compounds, and chemical change.
3. Write correct chemical formulas and names for elements and compounds.
4. Write chemical equations for basic types of chemical reactions.
5. Understand the quantitative relationships among reactants and products involved in basic chemical reactions. Be able to explain the concept of the mole in chemistry.
6. Draw the electronic configurations and atomic orbitals for main group elements.
7. Explain how chemical bonds are formed in terms of rearrangement of valence electrons and of atomic orbital interactions.
8. Predict and explain the effect of bonding on molecular structure, polarity, and physical properties such as melting and boiling points.
9. Understand energy changes and chemical reactivity of simple inorganic compounds.
10. Perform solution calculations involving percent composition and molarity.
11. Explain the properties of acids and bases and the difference between strong vs. weak acid.

## Grading System:

Test 1	TBA	25%
Test 2	TBA	25%
Test 3	TBA	25%
Final Exam (Comprehensive)	Thursday May 07, 2015	25%

**Note: You will be given 1 week notice before each exam.**

**If you are found cheating on a test, you will be given a grade of zero for that test.**

**Grading Scale:** Grades will be assigned as follows, based on the Final Course Percentage.

100.0-90.0%	A
89.9-80.0%	B
79.9-70.0%	C
69.9-60.0%	D
< 60.0%	F

## ASSESSMENT OF STUDENT PERFORMANCE

**Tests (100%):** Total of four tests will be given during the semester. Test questions will be based upon material found in lecture notes, and homework assignments. Makeup tests will be offered only for excused absences. If you have special circumstances, please let me know as far in advance as possible before the test and I will make a reasonable effort to accommodate your situation. If you do not contact me before the test date/time, you will receive a zero for the Test Score.

**Non-graded Homework:** You will be given a list of homework problems for each chapter. The homework is NOT collected. However, I assume that you will do the homework multiple times to ensure your comprehension of the material. The answers will be provided at the beginning of the next chapter. Come see me if you are having difficulty with one or more problems.

**Classroom Lecture Materials:** Classroom lectures will be made using PowerPoint. The use of PowerPoint allows more material to be covered in class, frees the student from excessive note-taking, and allows for more meaningful class discussion / problem solving. Syllabus, lecture presentations and problem sets will be uploaded to (MUonline – CHM 111 course homepage – Files). It is the responsibility of the student to access and print the classroom materials (lectures and problem sets), place them in three-ring binder, review the materials, and bring the lecture materials with them to each class. During class, notes can be added to the Power Point presentations based on class discussion and sample problems. Students should also bring a **scientific non-programmable calculator** to class every day – as we will be working chemistry problems in class. Programmable calculators are NOT allowed for this course.

**Cell Phones:** Please turn off your cell phone during class. Texting is not permitted during class. When you are in class, please give your full attention to this class and resist using your cell phone. Thank you for complying.

### **ADA Student Statement:**

I am willing to work with any student so that you can succeed in this course. Please also familiarize yourself with the information in this website: <http://www.marshall.edu/disabled>

### **ADDITIONAL AIDS TO LEARNING CHEMISTRY:**

Student Study Groups – The formation of students study groups will be encouraged. Joining one of these groups will ease frustrations and make learning chemistry more fun!

### **How to be Successful in CHEM 111:**

1. If you don't understand something, seek help immediately. Help can be obtained from the instructor during posted office hours or from other classmates, from the Internet, etc. Get help right away. The worst thing you can do is to sit in class confused, day after day, hoping that understanding will magically happen - it won't!
2. Find a "study buddy" or study group who can work with you to master the material. This will make learning the material more fun. Besides, misery loves company!
3. Keep up with the work. Chemistry is a vertically-structured subject. Therefore, an understanding of current course material will depend upon an understanding of preceding material. Therefore, it is essential that you do not fall behind in the class. Concepts learned in one chapter will be used again and again in the chapters that follow.
4. Read the Chapter before coming to class. This will allow you to understand the lecture material more quickly and ask better questions to pin-point areas you do not understand.
5. Actively participate in class. Come to class prepared. Ask questions. Get involved. Your active participation will make the class more interesting.
6. Try to understand the big picture. Chemistry is more about understanding concepts than memorizing facts. Chemistry involves understanding key concepts and formulas and then solving problems using these concepts and formulas.
7. Complete assigned homework on-time. Practice makes perfect.
8. Give your best effort. With any endeavor in life, we only get out as much as we put in!
9. If you don't understand something, seek help immediately!

**Course Content:**

Topics to be covered ( <b>Tentative</b> )
Measurements
Energy and Matter
Atoms and Elements
Compounds and Their Bonds
Chemical Quantities and Reactions
Solutions
Acids and Bases