

# General Chemistry I



Chemistry 1110 - 001

Dr. Harris

Spring 2017 Course Syllabus

M,W,F: 10:30 – 11:20 am (Widtsoe 007)

Tuesday: 3 – 3:50 pm (ESLC 130)

4 credits

Dates		MON	TUES	WED	FRI
January	9 <sup>th</sup> – 13 <sup>th</sup>	Introduction	1	1	2
January	16 <sup>th</sup> – 20 <sup>th</sup>	Holiday	2	2	2
January	23 <sup>rd</sup> – 27 <sup>th</sup>	3	3	3	3
January/February	30 <sup>th</sup> and 31 <sup>st</sup> 1 <sup>st</sup> and 3 <sup>rd</sup>	3	Exam 1 3 p.m. ESLC 130	4	4
February	6 <sup>th</sup> – 10 <sup>th</sup>	4	4	5	5
February	13 <sup>th</sup> – 17 <sup>th</sup>	5	6	6	6
February	20 <sup>th</sup> – 24 <sup>th</sup>	Holiday	6 – 10:30 am meeting time (Widtsoe 007)	6	6
February/March	27 <sup>th</sup> and 28 <sup>th</sup> 1 <sup>st</sup> and 3 <sup>rd</sup>	6 and Extra Credit Informaiton	Exam 2 3 p.m. ESLC 130	7	7
March	6 <sup>th</sup> – 10 <sup>th</sup>	Spring Break	Spring Break	Spring Break	Spring Break
March	13 <sup>th</sup> – 17 <sup>th</sup>	7	7	7	8
March	20 <sup>st</sup> – 24 <sup>th</sup>	8	8	8	9
March	27 <sup>th</sup> – 31 <sup>st</sup>	9	9	9	9
April	3 <sup>rd</sup> – 7 <sup>th</sup>	Exam 3 10:30 a.m. Widtsoe 007	10	10	10
April	10 <sup>th</sup> – 14 <sup>th</sup>	11	11	11	11
April	17 <sup>th</sup> – 21 <sup>st</sup>	11	11	12	Make Up Exam by Appointment Only 10:30 a.m. Widtsoe 007
April	24 <sup>th</sup> – 28 <sup>th</sup>	12	12	12	12
May	3 <sup>rd</sup>			Final Exam 11:30 a.m. Widtsoe 007	

Exam Number	Date	Chapters Included
1	Tuesday, 31 <sup>st</sup> of January	1 – 3
2	Tuesday, 28 <sup>th</sup> of February	4 – 6
3	Monday, 3 <sup>rd</sup> of April	7 – 9
Make Up Exam	Friday, 21 <sup>st</sup> of April by appointment only	1 – 9
Final	Wednesday, 3 <sup>rd</sup> of May	10 through 12 – 25 questions 1 through 9 – 25 questions

Dr. Doug Harris

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Office Hours: 8:30 – 9:15 am MW or by appointment

## Materials

Karen Timberlake, *General, Organic, and Biological Chemistry: Structures of Life*, Custom Text, Pearson.

Scientific Calculator (no networking-capable calculators)

11. Although class attendance will not be officially taken, it will be absolutely essential that every effort is made in attending each lecture. All students will be held responsible for lecture material, worked problems, and/or course announcements that are presented in lecture.
12. If you choose to complete an optional extra-credit molecular modeling exercise, one percentage point (1%) will be added to your final grade percentage. This is helpful to those students who end up with a final borderline grade percentage. The extra-credit submission deadline will be at 10:30 a.m. Monday, April 3<sup>rd</sup> when we meet to take the third exam. Further information will be given in class on Monday, February 27<sup>th</sup> regarding the specific details in producing the extra-credit assignment.

### **Main Course Objectives and Assessment**

1. Prepare students for careers in health-related professions, environmental, and agricultural science.
2. "To make the study of chemistry an engaging and positive experience by relating the structure and behavior of matter to its role in health and the environment" (see text preface).
3. Lecture learning checks will be used as a means of assessing student comprehension. These student-centered learning strategies have previously proven successful in this chemistry course.

### **Some Learning Objectives:**

- Review math and learn to do calculations while working everyday examples of problems in health and medicine using metric units.
- Understand the relationship of isotopes to the atomic mass of an element on the periodic table.
- Understand the relationship between electron arrangement, group number, and periodic law.
- Understand different types of radiation, radiation protection, balancing of nuclear equations, and the fusion and fission processes.
- Learn the relationship between group numbers, valence electrons, and the formation of ionic and covalent compounds.
- Write ionic formulas and names of compounds with polyatomic ions.
- Use VSEPR theory to determine the shape, bond angles, and polarity of a molecule.
- Classify an equation as a combination, decomposition, replacement, combustion, and/or oxidation-reduction.
- For a given mass of a substance in a reaction, use the appropriate mole factors and molar masses to calculate the mass of a reactant, product/percent yield.
- Determine the energy lost or gained during a change of state/temperature.
- Use the ideal gas law to calculate an unknown pressure, volume, moles, and/or temperature of a gas.
- Understand solubility and determine whether a salt will dissolve in water.
- Calculate the percent concentrations and molarity of a solution.
- Describe the behavior of a red blood cell in hypotonic, isotonic, and hypertonic solutions.
- Understand and write the equilibrium constant for an equation.
- Describe the characteristics of acids and bases.
- Classify bases/acids as strong or weak.
- Predict whether a salt will form an acidic, basic, or neutral solution.
- Describe the function of a buffer.
- Describe the properties and functional groups found in organic compounds.
- Describe the physical properties and write the IUPAC names of alkanes and cycloalkanes.
- Describe the properties, reactions, and IUPAC names of alkenes and alkynes.