Belmont University
General Chemistry I: CEM 1610.01
Spring 2017
Credit hours: 4.00
Lecture: MWF 8:00 AM – 8:50 PM (JAAC 4098)
Lab: Friday 1:00 PM – 3:50 PM (JAAC 4083)

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Office hours: Monday 4:00 PM – 6:00 PM
Tuesday 10:00 AM – 12:00 PM, 1:00 PM – 2:00 PM
Wednesday 1:00 PM – 4:00 PM

This syllabus is intended to help the student plan his work in the course and is subject to change at any time by the instructor should a change be in the best interest of the class. If changes are made, you will receive email notification and will have access to schedule revisions on Blackboard.

A. Introduction and Course Description

- General Chemistry I (CEM 1610) is the first course of a two semester introduction to chemistry intended for science majors. During the first semester of General Chemistry, covered topics include: atomic & molecular structure, chemical bonding models, stoichiometry, reactivity patterns and an introduction to the gas laws.

- **In order to continue on to General Chemistry II (CEM 1620), *a grade of C- or better in CEM 1610, or equivalent* is required.**

- Please be advised that although this class is counted as a General Education Science, it is designed for **Science majors in Chemistry, Physics, Biology and Math.** The curriculum is challenging and requires **a minimum of 9 hours/week of studying outside of class and lab time.** This course is a foundation course for all upper level chemistry courses and a difficult course it is. The students in this course are a) science majors and minors, b) pre-health (but not a science major) or c) looking for a challenge. You are expected to have a basic understanding of matter and interaction of matter (this is the information equivalent to what you covered in a high school physical science course).

- This is a college level course and you will be expected to put in college level effort. You will find that this is very different from your high school chemistry class – the pace is faster, you are expected to work on your own to understand many of the topics discussed in class, the exams are very demanding, lab work will involve integrating lecture concepts with experiment, and there is a lot of math.

- Prerequisite or co requisite:
  - *Minimum Math ACT > 24 or SAT > 560, or enrollment in MTH 1110 (College Algebra) or equivalent, or completion of MTH 1110 or equivalent with a grade of C- or better.*
  - If you feel that your algebra skills are a little weak, you will want to spend some extra time working the assigned problems to make sure that the math (and not just the chemistry) makes sense.
  - Appendix 1 in the back of your textbook contains the math that you need to know for this course.

What is a syllabus?

- A syllabus tells you everything you need to know about a course: required reading, problem assignments, tentative course schedule, exam dates, grading procedures, and course policies. You are responsible for reading and understanding the syllabus for each of your courses. The function of a syllabus is to allow you prepare for each class meeting without constant reminders from the instructor.

Why do I have office hours?

- Office hours are set-up for you!
- This is a perfect time for you to stop by and talk about some topic from lecture that you didn't quite get.
- Stuck on a problem? Come in, I can usually show you where you got off track and give you another way to approach the problem.
    - I won't do your homework for you.
    - I ask that you try the problems before you ask for help.
    - The real learning process involves trial and error. It's better to make mistakes on homework than it is to make mistakes on the exams.
- **Dates and times for my office hours are located on the front page of this syllabus, on Blackboard and outside my office door.**
- I have tried to pick office hours that will accommodate your various schedules, but I understand that you have many demands and may not be able to make those times. If none of my office hours "work" and you have some questions, let me know and we will set up another time for you to stop by.
- I am here to help; so, please don't be afraid to ask questions …
    - in class
    - during office hours
    - through email

How do you get help if you can't make it to my office hours?

- **Email me! – It is the best way to contact me outside of office hours (seriously, I check my email A LOT!)**

B. Belmont Academic Integrity Policy

- The Belmont community values personal integrity and academic honesty as the foundation of university life and the cornerstone of a premiere educational experience. Our community believes trust among its members is essential for both scholarship and effective interactions and operations of the University. As members of the Belmont community, students, faculty, staff, and administrators are all responsible for ensuring that their experiences will be free of behaviors, which compromise this value. In order to uphold academic integrity, the University has adopted an Honor System. Students and faculty will work together to establish the optimal conditions for honorable academic work. Following is the Student Honor Pledge that guides academic behavior:

  "I will not give or receive aid during examinations; I will not give or receive false or impermissible aid in course work, I the preparation of reports, or in any other type of work that is to be used by the instructor as the basis of my grade; I will not engage in any form of academic fraud. Furthermore, I will uphold my responsibility to see to it that others abide by the spirit and letter of this Honor Pledge."
- You are required to abide by the university honor code of conduct above. Failure to adhere to the honor code will result in a substantial drop you course grade.

  Examples of behavior that would be considered breaking the honor code include (but are not limited to) the following.
    - Allowing another student to copy your homework or lab data
    - Discussing the content of an exam or quiz with students who have not completed the exam or quiz
    - Using any means to look up information or communicate with another student during an exam or quiz (cell phone, programmable calculator, etc…)
- For a complete description of the Academic Honor System, please see The Bruin Guide: http://www.belmont.edu/studentaffairs/student_conduct_academic_integrity/bruinguide/

C. Determination of Grades and the Grading Scale

- Your grade will be based on four main areas: exams, required-reading quizzes, in-class participation and lab.

Activity	
Exams (3) + Final Exam*	60%
Reading Quizzes and Homework	10%
Attendance/In-Class Participation	5%
Laboratory	25%

*Refer to "The Second Chance at Greatness" detailed below.

Note: Grades will be posted in Blackboard. However, your weighted grade will **not** be calculated in Blackboard.

How do I calculate my weighted grade?

- **Calculate your grade for each category separately, e.g.,**
  (your points earned for lab work/total points possible for lab work)*100

- **Then insert each separate category grade into the equation below:**

(0.6)(Exams) + (0.10)(Reading Quizzes/Homework) + (0.05)(In-Class Participation) + (0.25)(Laboratory)

Grade Range	Letter Grade
90 – 100	A
88 – 89.9	A-
86 – 87.9	B+
79 – 85.9	B
77 – 78.9	B-
75 – 76.9	C+
67 – 74.9	C
65 – 66.9	C-
63 – 64.9	D+
52 – 62.9	D
50 – 51.9	D-
0 – 49.9	F

Note: Grades of +/- have been assigned to the top/bottom 2 points in the range.

Exams:

- You will take three exams during the semester and a final exam. Each of the exams and the required portion of the final exam will be weighted equally.
  - 100 points each

- The exams will be very demanding.

- Generally, they consist of some multiple choice or short-answer questions and several multiple part problems.
  - There will be both conceptual and calculation based questions.

- Scoring an "A" requires a deep understanding of the lecture content as well as the ability to solve problems.

- You will be asked to apply knowledge and/or problem solving skills learned in lecture to new problems and situations. The exams will test your ability to assess and work new, complex problems – integrating multiple concepts from class where appropriate.

- As you advance through the course, much of the material you learned earlier will become part of the expectation of knowledge in subsequent exams. In other words, all exams are cumulative (e.g., while nomenclature (naming compounds) might be something that is tested on the first exam, the second exam will just assume that you "know it").

The "Second Chance at Greatness" Final Exam*:

- Your Final Exam [Exam 4 (Chapter 8) and "The Second Chance at Greatness"] is scheduled for Monday 5/1/2017 at 8:00 AM.

- The Final Exam will contain four sections.
  - Sections 1, 2 and 3 will correspond to the material covered for Exams 1, 2 and 3, respectively.
  - Section 4 of the final exam will test the material covered in the course from Exam 3 until the end of classes.
  - Sections 1, 2 or 3 are optional. If you decide to complete ONE of these sections during the final exam, the higher of the two scores (either the original exam score OR the section score) will be used to calculate your final grade.
    - This type of exam gives you a chance to recover from poor test grades early in the semester.
  - Since Section 4 covers material that has not been tested, Section 4 MUST be completed by all students and will be weighted equally with the three semester exams.

- This does not imply that you can put off learning the course material until the end of the semester. Chemistry is a cumulative subject. If you don't understand the information for Exam 1, you will find that learning the material for Exam 2 is nearly impossible. It is important to always stay current in the course!

Reading Quizzes:

- You need to come prepared to class with reading/outlining done. It is expected that the sections pertaining to each topic for a particular lecture will be read BEFORE attending class and reread subsequent to class attendance. Additional reading may be necessary in order to achieve full comprehension of the topics covered in the course.

- You will be given pre-lecture reading quizzes from Cengage OWLV2 (online HW site).
  - 10 points each
  - Assigned sections for each chapter are listed on the syllabus and will be posted on Blackboard.
  - Assignments will be available starting at 12:00 PM **(USUALLY)** on the class day before they are due and close at 7:00 AM on the class date they are due. **Note: Some assignments do "open early." These assignments are noted in Section K. *Lecture and Lab Schedule* of the syllabus.**
  - Do not wait until the last minute to do your assignments. **"Crashing/freezing" computers will NOT be an excuse for incomplete assignments.**
  - Grades are based upon completion of questions with correct answers.
    - So, reading before taking the quizzes will help reduce the amount of time you have to spend on the quizzes themselves.
  - The lowest 4 reading quiz grades will be dropped at the end of the semester.

Homework

- **The best way to learn is to practice!**
  - You will be expected to participate in in-class calculations.
  - There will be calculation based questions on your exams.

- You will be given homework from Cengage OWLV2 (online HW site).
  - 50 points each
  - Assigned homework for each chapter are listed on the syllabus and will be posted on Blackboard.
  - Homework assignments will be available during the following times:
    - **Homework for Learning to use OWLV2**
      - OPEN 1/9 @ 12:00 AM, CLOSED 1/23 @ 10:00 PM
    - **Homework for Exam 1 Material: Chapters R, 1, 2**
      - OPEN 1/9 @ 12:00 AM, CLOSED 2/5 @ 10:00 PM
    - **Homework for Exam 2 Material: Chapters 3, 4**
      - OPEN 2/6 @ 12:00 AM, CLOSED 3/14 @ 10:00 PM
    - **Homework for Exam 3 Material: Chapters 5, 6**
      - OPEN 3/15 @ 12:00 AM, CLOSED 4/11 @ 10:00 PM
    - **Homework for Exam 4 Material: Chapter 8**
      - OPEN 4/12 @ 12:00 AM, CLOSED 4/25 @ 11:55 PM
  - **Do not wait until the last minute to do your assignments. "Crashing/freezing" computers will NOT be an excuse for incomplete assignments.**
  - Grades are based upon completion and correctness.
    - For calculation-based problems you will have a total of 10 attempts at the problem. You will receive feedback during your attempts at each question.
  - The lowest homework grade will be dropped at the end of the semester.

- **I also HIGHLY SUGGEST THAT YOU TRY OTHER END-OF-CHAPTER PROBLEMS in your textbook.**

- As you work the problems, keep them organized in a notebook dedicated to chemistry and **show your work** – it helps me answer your questions when I can see what you've already done.
    - You will be expected to show your work on exams in order to receive full credit.

Attendance/In-Class Participation:

- In-class participation will be based on three things.
    - You will be expected to positively contribute to any class discussions.
    - You may also be required to set-up and solve relevant mathematical calculations during class.
    - You are expected to be in class. You can't participate if you're not there.
        - **I'll be taking attendance.**

- Throughout the semester, for **SOME** sections, I will be posting lecture outlines or PowerPoint outlines on Blackboard. **You will be informed when such information is posted and will be expected to bring printed copies to class with you.**

Laboratory Work:

Why do we have lab?

- Much of what you will learn this semester will be covered in lecture format during regular class meetings. When it is possible, you will conduct experiments in the laboratory to further explore some lecture topics. The purpose of lab is to reinforce what you have learned in lecture. One of your goals in lab each week is to figure out how the experiment connects to a lecture topic.

- You will be required to keep all lab work and data in the bound lab notebook.
    - Lab notebooks will be checked throughout the semester.
    - What your lab notebooks need to look like can be found in the lab manual.
    - Helpful hint: you will save time by transferring any relevant tables from the lab text to your notebook before lab.
    - Your standing pre-lab assignment is to complete any pre-lab questions assigned in the experiment and complete an online pre-lab quiz on Blackboard BEFORE coming to lab.

How is my lab work graded?

- The grading protocol for lab can be found in the lab manual. Lab has four components.
    - For most labs, there is an online pre-lab quiz on Blackboard that must be taken BEFORE the actual lab begins.
        - 20 points each
    - For most labs, there are pre-lab questions that will be due at the beginning of lab (BEFORE the lab begins).
        - 20 points each
    - Your laboratory notebooks will be checked throughout the semester for completeness and proper form.
        - 100 points total
    - You will turn-in your data analysis/post-lab questions, or (occasionally) a formal lab report.
        - 60 points each for regular data analysis/post-lab questions
        - 160 points each for formal lab reports

D. Course Requirements

- Lecture Textbook: Zumdahl, S. S.; Zumdahl, S. A. *Chemistry: An Atoms First Approach*, 2nd ed.; Cengage Learning: Boston, MA, 2016.

- Laboratory Text: *CEM 1610 Lab Manual Spring 2017*; Belmont University: Nashville, TN 2017. (available on-line via Blackboard)

- You will need a scientific calculator (non-programmable and non-graphing) for this class.

- You will need a bound laboratory notebook (composition notebook).

- You must wear safety GOGGLES for lab. Safety glasses are not sufficient.

E. Course Policies and Attendance

- Attendance is mandatory.
  - If you have a pre-planned absence you are expected to notify me ahead of time.
  - Provost-excused or doctor-excused absences must be documented.
  - **If you are really sick (e.g., stomach virus) – please don't show up to class/lab!**
    - Email me to let me know why you are absent and bring in a doctor-excuse the following class period.
  - After **9 lecture absences or 3 laboratory absences**, you will be dropped from the course with a grade of "FN" (failure for non-attendance).

- Cell phones must be silenced during class. If you forget, please turn them off when they ring.

- Texting, listening to music, and other distractions are not allowed.

- **Blackboard will be used for this course.** You will need to **check the course Blackboard page regularly** for access to reading quizzes, homework problems, schedule changes, assignment due dates, and general course details.
  - **Be sure you frequently check your email address that is tied to Blackboard.** I will send out class emails regularly regarding lecture and laboratory assignments, review materials, lecture materials, etc.

- In the event that class must be canceled or moved from its normal meeting location or time, you will be notified via email, and it will be posted on Blackboard.

F. Policies on Late Work/Missing Labs/Missing Exams

- There will be **NO** make-up work allowed on reading quizzes or homework.
  - Pay attention to due dates!
  - Once the reading quizzes or homework assignments are closed, they will not be re-opened.

- There will be **NO** make-up on any exams.

- Post lab write-ups/lab reports will be due at the beginning of lab **(Fridays at 1:00 PM)** the week after the lab is completed.
  - If you do not turn in your write-up/report, you will have 1 week (7 days) in which to turn it in.
    - There will be a late penalty
      - 12 points for regular data analysis/post-lab questions
      - 32 points for formal lab reports
    - If the write-up/report is not turned in by **7 days** after your normal lab period, you will receive a ZERO for that lab.
- There will be **NO** make-up pre-lab quizzes.
  - Blackboard pre-lab quizzes much be completed before the start of lab.
  - Once lab starts **(Fridays at 1:00 PM)**, you will not be allowed to take the quiz. Missing a pre-lab quiz will result in a grade of ZERO for 20 points of your grade for that particular lab.

- There will be **NO** make-up labs.
  - Do not schedule appointments, trips, vacations or any other activities during your scheduled lab time.
  - If you have a **valid reason** for missing the lab (as determined by the instructor), your lab grade will be determined based on the labs completed.
    - The instructor reserves the right to provide an alternate assignment.
  - Do NOT miss lab!

G. Dropping the Course

- A decision to stop attending class does NOT constitute dropping the course. If your name appears on the roster at grading time and you have not officially dropped the course, a grade will be assigned based upon standard departmental and university policies. Please review the academic calendar for information about drop dates: http://www.belmont.edu/acalendar/#jan14

H. Accommodations of Disabilities

- In compliance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, Belmont University will provide reasonable accommodation of all medically documented disabilities. If you have a disability and would like the university to provide reasonable accommodations for the disability during this course, please notify the Office of the Dean of Students located in the Beaman Student Life Center (460-6407) as soon as possible.

I. Course Evaluations

- You are expected to complete course evaluations at the end of the semester.
- Course evaluations are extremely important. Student responses on evaluations help faculty improve courses in order to improve student learning and are used in the ongoing review of faculty work for tenure, promotion, and performance decisions.
- Comments that are constructive and reflective are taken seriously by faculty and administrators.

J. Course Goals and Objectives

There were several goals in mind when this course was planned. Science classes in general (and Chemistry specifically) require you to approach learning in a different way. These goals are not about learning specific scientific facts (though some of that is inevitable), but they are about growing and maturing as students of science – learning how to learn.

- Goal #1: read, understand and solve problems in the context of chemical principles
- Goal #2: read and process information from each chapter, then apply that knowledge to new situations
- Goal #3: learn how to carry out a laboratory experiment and relate concepts from lecture – interpret data in a meaningful way
- Goal #4: become responsible for your own academic success
- Goal #5: transition from a beginner level of problem-solving (high-school) to an intermediate level (college)

Content	Learning Objectives**†
Chemistry: The Science of Change	Students will be able to: • Identify components of the scientific method. • Differentiate between states of matter. • Determine whether a mixture is heterogeneous or homogeneous. • Categorize properties of matter as being quantitative/qualitative; physical/chemical; extensive/intensive. • Recall and use SI unit prefixes. • Perform conversions between different temperature scales. • Apply derived units to perform calculations. • Apply significant figure rules in calculations. • Distinguish between accuracy and precision. • Use conversion factors to conduct unit conversions. • Apply dimensional analysis toward solving problems.
Atoms and the Periodic Table	Students will be able to: • Understand the concept of the atom and the nature of an element. • Recognize the importance of experiments conducted by Thomson, Millikan, Röntgen, and Rutherford in regard to understanding the nature and structure of atoms. • Understand the different types of radiation that radioactive substances can produce. • Identify the location and physical properties of electrons, protons, and neutrons in atoms. • Calculate the mass number of an isotope. • Utilize the mass number of an isotope to determine the number of electrons, protons, or neutrons. • Predict whether a particular nucleus is stable. • Calculate the average atomic mass of an element. • Convert between mass, moles, and number of atoms.
Quantum Theory and the Electronic Structure of Atoms	Students will be able to: • Identify energy as being kinetic/potential. • Understand the law of conservation of energy. • Describe properties of waves. • Calculate the wavelength or frequency of light. • Cite examples of the electromagnetic spectrum in regard to wavelength and type of radiation. • Understand the basis of quantum theory and its relationship to the frequency of radiation. • Describe the basis of the photoelectric effect in terms of photon energy and frequency of radiation. • Identify the relevance of the de Broglie hypothesis. • Explain the relevance of the Heisenberg uncertainty principle. • Understand the meaning of each type of quantum number. • Apply quantum number rules to determine allowable values for each type of quantum number. • Understand the basis of atomic orbitals. • Arrange atomic orbitals based upon energy levels. • Understand the meaning of the Pauli Exclusion Principle and how it relates to electron configurations.

	• Apply Hund's Rule in drawing electron orbital diagrams. • Determine the electron configuration of an atom using the Aufbau Principle. • Use the periodic table to determine the electron configuration of an atom.
Periodic Trends of the Elements	Students will be able to: • Explain how elements are arranged in the periodic table. • Use the location of an element in the periodic table to predict some of its characteristics. • Utilize the periodic table to determine the electron configuration of an element. • Describe the importance of valence electrons to chemical characteristics. • Define effective nuclear charge, atomic radius, ionization energy, and electron affinity. • Predict differences in effective nuclear charge, atomic radius, ionization energy, and electron affinity between elements using periodic trends. • Provide some of the characteristics of metals, non-metals, and metalloids. • Predict the charge of an ion formed from a main group element. • Determine the electron configurations of ions of main group and d-block elements. • Predict the sizes of ions relative to atoms of the same element. • Define isoelectronic species and arrange a series of isoelectronic species according to ionic/atomic radius.
Ionic and Covalent Compounds	Students will be able to: • Distinguish between compounds, elements, and mixtures. • Prepare Lewis dot symbols of elements and ions. • Define ionic bonding and provide examples of compounds that contain ionic bonds. • Use Coulomb's law and distance between ions to rank lattice energies of ionic compounds. • Utilize rules of nomenclature to name the different types of compounds. • Recognize covalent bonding in ionic species. • Name polyatomic ions and know their formulas and charges. • Calculate the percent composition by mass and molecular/formula/molar mass of a compound. • Convert between mass, moles, and number of particles. • Determine the empirical formula of a compound from percent composition or from combustion analysis data. • Use the empirical formula and molar mass to determine the molecular formula of a compound. • Compare properties of ionic and covalent compounds.
Representing Molecules	Students will be able to: • Define the octet rule as it relates to Lewis structures of compounds. • Apply rules for drawing Lewis structures toward determining the Lewis structures of compounds. • Determine the polarity of a bond using differences in electronegativity. • Define electronegativity, dipole moment, partial charge, and percent ionic character. • Determine the formal charge on the atoms in a Lewis structure. • Use formal charges to identify the most likely structure of a compound when more than one Lewis structure can be drawn. • Define resonance and determine the resonance structures of a species. • Determine Lewis structures of species that do not follow the octet rule, including radicals. • Explain exceptions to the octet rule.
Molecular Geometry, Intermolecular Forces and Bonding Theories	Students will be able to: • Use the VSEPR model to determine the shape of a molecule. • Describe the difference between electron geometry and molecular geometry. • Understand why deviations from ideal bond angles occur. • Determine when molecules will be polar or nonpolar. • Identify structural isomers of compounds. • Describe and identify the different types of intermolecular forces. • Predict the hybridization of molecules to explain bonding in molecules. • Understand how atomic orbitals combine to form molecular orbitals according to molecular orbital theory. • Identify bonding and antibonding molecular orbitals. • Calculate the bond order of diatomic species. • Describe localized and delocalized bonds in molecules.

Chemical Reactions	Students will be able to: • Define chemical reaction, chemical equation, reactant, and product. • Recognize physical states of reactants and products in a chemical equation. • Balance chemical equations. • Describe commonly encountered reaction types. • Use combustion analysis to determine the empirical formula of a compound. • Determine amounts of reactant required or product formed using stoichiometry. • Identify the limiting reactant in a reaction. • Define theoretical yield, actual yield, and percent yield. • Predict the theoretical yield of a reaction. • Find the percent yield of a reaction. • Use the periodic table to predict general trends in reactivity of main group metals.
Chemical Reactions in Aqueous Solutions	Students will be able to: • Categorize compounds as nonelectrolytes/weak electrolytes/strong electrolytes. • Identify weak and strong acids and bases. • Apply solubility guidelines toward determining whether a reaction will produce a precipitate. • Write molecular, ionic, and net ionic equations for a reaction. • Identify the spectator ions in a reaction. • Understand the definition of Arrhenius and Brønsted acids and bases. • Identify an acid as monoprotic/diprotic/triprotic. • Predict the neutralization reaction between an acid and a base. • Identify the species oxidized/reduced, the reducing/oxidizing agents and half-reactions in REDOX reactions. • Apply oxidation number rules toward determining oxidation number. • Use the activity series to determine whether a reaction occurs. • Predict the balanced equation for REDOX reaction. • Identify the different types of reactions that may be REDOX reactions. • Calculate the molarity of a solution. • Determine the concentration of a solution that has been diluted and apply dilution principles toward serial dilutions. • Use the pH scale to classify a solution as being acidic, basic, or neutral. • Use pH, or concentration of hydronium ion to conduct calculations. • Apply concepts of stoichiometry toward reactions in solution and their associated problems including gravimetric analysis and titrations.
Gases	Students will be able to: • Distinguish among gases, liquids and solids. • Understand the kinetic molecular theory. • Define effusion and diffusion. • Define pressure and convert among units of pressure. • Describe the major characteristics of the various gas laws: Boyle's, Charles's, Avogadro's, and combined. • Perform calculations using the gas laws, including the ideal gas law. • Identify the values for STP. • Use the ideal gas equation to determine characteristics of a gas including density and molecular weight. • Identify factors that may cause gases to deviate from ideal gas behavior. • Use the van der Waals equation to determine the pressure of a real gas. • Define and be able to calculate mole fraction. • Use Dalton's law of partial pressures to determine the mole fraction or partial pressure of gases in a mixture of gases. • Use the ideal gas equation in stoichiometric calculations.

**Objectives were taken/adapted from Burdge, J.; Overby, J. *Chemistry, Atoms First*, 2nd ed.; McGraw-Hill: New York, NY, 2014. The same objectives will be covered using Zumdahl, S. S.; Zumdahl, S. A. *Chemistry: An Atoms First Approach*, 2nd ed.; Cengage Learning: Boston, MA, 2016. (Applicable for CEM 1610 starting fall 2016.)

†Course content will be delivered through lecture and will be assessed through homework, in-class problem solving, reading quizzes, exams and labs. It is the goal that students understand the learning objectives with a minimum grade: C-, 65%.

K. Lecture and Lab Schedule

Class Date	Tentative Lecture Schedule	Reading quizzes due by 7:00 AM
1/9	Class Introduction, R1 – R7	
1/11	R1 – R7	Sections R1 – R7
1/13	R8 – R10	Sections R8 – R10 Syllabus assignment **due in class (20 points)**
1/16 (1/17: last day to drop with refund)	**Martin Luther King Day – no class**	
1/18	1.3 – 1.4	Sections 1.3 – 1.4
1/20	1.3 – 1.4, 1.5 – 1.7	
1/23	1.5 – 1.7	Sections 1.5 – 1.7 (opens early) **Homework for Learning to use OWLV2** Open: 1/9 @ 12:00 AM Closed: 1/23 @ 10:00 PM
1/25	2.1 – 2.2	Sections 2.1 – 2.2
1/27	2.3 – 2.5	Sections 2.3 – 2.5
1/30	2.6 – 2.8	Sections 2.6 – 2.8
2/1	2.9 – 2.11	Sections 2.9 – 2.11
2/3	2.12 – 2.13	Section 2.12 – 2.13
2/6	**Exam 1 (Chapters R, 1, 2)**	**Homework for Exam 1 Material:** • **Chapter "R"** • **Chapter 1** • **Chapter 2** Open: 1/9 @ 12:00 AM Closed: 2/5 @ 10:00 PM
2/8	3.1 – 3.2	Section 3.1 – 3.2 (opens early)
2/10	3.3 – 3.4	Section 3.3 – 3.4
2/13 (2/14: last day to withdraw with "W")	3.4 – 3.5	
2/15	3.6 – 3.7	Sections 3.5 – 3.7 (opens early)
2/17	3.8 – 3.9	Sections 3.8 – 3.9
2/20	3.10 – 3.12	Sections 3.10 – 3.11, 3.12
2/22	4.1	Sections 4.1
2/24	4.2 – 4.3	Sections 4.2
2/27	4.3	Sections 4.3
3/1	4.4 – 4.5	
3/3 (midterm grades due)	4.7	Sections 4.4 – 4.5, 4.7 (opens early)
3/6	**Spring break – no class**	
3/8	**Spring break – no class**	
3/10	**Spring break – no class**	
3/13	Review	
3/15	**Exam 2 (Chapters 3, 4)**	**Homework for Exam 2 Material:** • **Chapter 3** • **Chapter 4** Open: 2/6 @ 12:00 AM Closed: 3/14 @ 10:00 PM
3/17	5.1 – 5.4	Sections 5.1 – 5.4 (opens early)
3/20	5.5 – 5.6	Sections 5.5 – 5.6
3/22	5.7 – 5.9	Sections 5.7, 5.8 – 5.9
3/24	5.10	Sections 5.10
3/27 (3/27: last day to withdraw with "WP"/ "WF")	5.11	Sections 5.11
3/29	6.1 – 6.2	Sections 6.1 – 6.2
3/31	6.3 – 6.4	Sections 6.3 – 6.4
4/3	6.5 – 6.7	Sections 6.5 – 6.7
4/5	6.8 – 6.9	Sections 6.8
4/7	6.10	Sections 6.8 – 6.10
4/10	Review	

4/12	**Exam 3 (Chapters 5, 6)**	**Homework for Exam 3 Material:** • **Chapter 5** • **Chapter 6** Open: 3/15 @ 12:00 AM Closed: 4/11 @ 10:00 PM
4/14	**Easter break – no class**	
4/17	8.1 – 8.3	Sections 8.1 – 8.3 (opens early)
4/19	8.4 – 8.5	Sections 8.4 – 8.5
4/21	8.6 – 8.7	Sections 8.6 – 8.7
4/24	8.8 – 8.9	Sections 8.8 – 8.9 **Homework for Exam 4 Material:** • **Chapter 8** Open: 4/12 @ 12:00 AM Closed: 4/25 @ 11:55 PM
4/26	**Academic Preparation Day – no class**	
Final Exam [Exam 4 and the "Second Chance at Greatness"] Monday 5/1/2017 at 8:00 AM		

Note: This syllabus is intended to help the student plan his/her work in the course and is subject to change at any time by the instructor should a change be in the best interest of the class.

Friday	Lab Schedule
1/20	Check-In and Laboratory Fundamentals Exercise/Density, Precision & Caffeine!
1/27	Atomic Spectra
2/3	Periodic Trends – Pattern Recognition I
2/10	Become Mendeleev – Pattern Recognition II
2/17	Gravimetric Analysis and Popcorn***
2/24	**no lab**
3/3	Molecular Structure and Bonding Theories
3/10	**Spring Break – no lab**
3/17	Qualitative Analysis I
3/24	Qualitative Analysis II
3/31	Limiting Reactant – Let's Make Chalk***
4/7	Acids, Bases: Reactions & Observations Skills
4/14	**Easter Break – no lab**
4/21	Gas Laws

*** These labs will require full lab reports.

IMPORTANT NOTE: Belmont University Emergency Resources

- http://www.belmont.edu/counseling/resources.html
- http://www.belmont.edu/counseling/emergency_information.html
- http://www.belmont.edu/counseling/collaborative-care.html
- http://www.belmont.edu/ocs/belmont_alert_system.html
- http://www.belmont.edu/ocs/security_notifications_and_timely_warnings/index.html

By signing this, I assure that I have read and understand the complete Spring 2017 General Chemistry I: CEM 1610.01 syllabus (found on Blackboard and discussed in class) and am responsible for all of the assignments, guidelines and policies stated therein.

Student Name (Print) _____

Student Signature _____

Date _____