LECTURE SCHEDULE

Week	Date	Lecture Topics	Chapter	HW or Test
1	8/19	Introductions, significant figures, units Precision vs. accuracy, metric measures Unit conversions, density, temperature	**1** **Chemical Foundations**	HW-1
2	8/26	Chemical history, elements, isotopes, electrons, atoms, molecules & ions, nomenclature Periodic table	**2** **Atoms, Molecules & Ions**	HW-2
3	9/2	Chemical reactions & stoichiometry, mole Limiting reactant, yields, balancing equations atomic mass, molarity, mass %	**3** **Stoichiometry**	HW-3
4	9/9	Electrolytes, common acids & bases oxidation & reduction reactions (redox) titrations, precipitates, aqueous solutions, molarity (M)	**4** **Chemical Reactions & Solution Stoichiometry**	HW-4
5	9/16	Gas pressure units, Boyle's & Charles' laws ideal gas equation, Van der Waals, mole fraction intermolecular forces, Avogadro's Law, KMT	**5** **Gases**	HW-5
6	9/23	Energy, Enthalpy, calorimetry, Hess's Law Standard Enthalpy of Formation, Fuels and other energy sources	**6** **Thermochemistry**	HW-6
7	9/30	Photons, energy quantum, and wave behavior atomic models, nature of light spectra Bohr atom model and quantum numbers	**7** **Atomic Structure & Periodicity**	HW-7
	10/2	**TEST-I [Ch. 1 through 5]**		**TEST-I**
8	10/7	More of the super cool stuff in Chapter 7 Quantum numbers and their consequences		
9	10/14	Chemical bonding, ionic vs. covalent bonding Lewis structures, formal charge resonance, electronegativity, polar bonds	**8** **Bonding: General Concepts**	HW-8
10	10/21	Hybrid orbitals, MO, molecular orbital theory paramagnetism, bond order, sp, sp^2, sp^3, dsp^3, & d^2sp^3 hybridizations,	**9** **Covalent Bonding: Orbitals**	HW-9
*11	10/28	Hybrid orbitals, MO, molecular orbital theory paramagnetism, bond order, sp, sp^2, sp^3, dsp^3, & d^2sp^3 hybridizations,	**9** **Covalent Bonding: Orbitals**	HW-9
12	11/4	London and other intermolecular forces liquids and solids, hydrogen bonds, viscosity, crystal types, phase diagrams	**10** **Liquids & Solids**	HW-10
13	11/11 11/13	Veterans Day Holiday Solutions, colloids, molality, Normality colligative properties, Henry's Law vapor pressure of solutions	**11** **Properties of Solutions**	HW-11
14	11/18	Wrap-up and/or catch-up Al Gore's Oscar winning movie	**"An Inconvenient Truth"**	
15	11/25 **11/27**	Review for Test II **Thanksgiving Holiday**		
16	**12/2** 12/4	**TEST-II [Ch. 6 through 11]** Review for final examination		**TEST-II**
17	**12/?**	**Cumulative ACS Final Exam.** **Check SPC website for details**		**FINAL EXAM**

*** C & E News summary report due**

General Chemistry and
Qualitative Analysis I

Class meetings are 0930-1045 T & R in SC 140. A weekly laboratory (CHM2045L) is also required. OFFICE HOURS: I am in my office (SC 143B) from 0900-0920 M- R; and 1100 -1230 M-R and (1215-1330 T & R by appointment). Exact times are posted near my office door. Students should see me during office hours for attendance records, point totals, or with substantive questions about material already covered; or just stop by to say hello and visit. My office number is 341-4374.

CLASS ATTENDANCE POLICY: Students should attend all lectures. Attendance will be taken at the beginning of class. Absences in excess of four (4) may result in a deduction of 25 points per excess absence. It is the responsibility of the student to obtain any materials missed during an absence. If an absence means that you will miss a scheduled test you must see me in advance and make arrangements to make up that test. Thrice tardy equals an unexcused absence. It is the responsibility of the tardy student to see me immediately after class to change the absence entry to a tardy. Leaving class early without the explicit prior approval of the instructor will result in an absence. Please inform the instructor of any extenuating circumstances regarding attendance.

TESTS: There will be two section tests, each a full class period in length. Tests may cover any material listed on the syllabus prior to the test date, with emphasis placed on lecture and reading material covered since the last test. Each test will be worth 200 points toward the final grade. If you anticipate missing a scheduled test please see me at least one week beforehand to make arrangements to take a makeup test. There will be no make-up test unless arrangements are made in advance of the test date.

HOMEWORK (HW): There are OWL2 homework exercises (one for each chapter) each worth ~20 points. Each HW exercise is designed to emphasize that chapter's material. (If one successfully completes all homework the effort will yield ~220 HW points.) Your ten (10) best chapter HW scores will count toward your final grade. HW assignments will be completed and graded online. Participation in OWL2 HW is required. See page 3 (below) for details. Please complete the Intro to OWL2 module(s) first as it will help prepare you for special notations used in chemistry.

REPORTS: A typed report submitted for this course will be worth 150 points.
Please see attached handout (p. 4) for details.

FINAL EXAM: A CUMULATIVE Final Examination is worth 250 points.

COURSE GRADE: A grand total of 1000 points are possible in this course. Extra credit (if any) will be added to your total point earned as listed above.
Letter grades are earned as follows:

A= 90-100%; B= 80-89.99%; C= 70-79.99%; D= 60-69.99%; F= below 60%.

N. B. The withdrawal deadline for this semester is 23 October.
=> If a student wishes to withdraw from the course (and/or laboratory) they MUST do so before this deadline. Instructor notification would be appreciated. After this date if a student fails to meet the attendance criteria they will be withdrawn with a WF grade for the course (and lab).
Auditing students receive a "W" for nonattendance. Proper registration in any SPC course is the student's responsibility.
Note: This lecture course, CHM 2045, is linked to a co-requisite laboratory course CHM2045L and both must be taken concurrently. [If you withdraw from one, you must withdraw from both.]

Text: Chemistry, ninth edition, 2014, by Zumdahl & Zumdahl; Cengage
ISBN 978-1-133-61109-7.

Homework exercises (HW problems) are designed to provide you with a practical test of your chemistry understanding and problem solving abilities. Wonderful exercises are found at the end of each chapter. Within each problem section the level of difficulty gradually increases. It is best to start with the lowest numbered exercises first and progress toward the more difficult problems. Pacing yourself through these exercises is an excellent study aid.

Make sure to set aside enough study time to complete at least 10-12 exercises every time you study chemistry. Working these exercises is an excellent way to study and sharpen your problem solving skills. Bring questions or problems you are having with the exercises (or the reading material) to class or see me during office hours. **One way to not fall behind is to make a determined effort to stay ahead.**

I suggest you first read the assigned chapter. Immediately begin work on Exercises from that chapter. Do as many as your study time will allow but make sure to come back as soon as possible and complete any unfinished Exercises. Keep all your worked Exercises in a neat, well-organized notebook (a three ring binder works well). Some uniform numbering system [like 3.23 for Exercise 23 from Chapter 3] helps. Many HW and some Test questions will be drawn directly from these Exercises (with perhaps some minor modifications).

Don't get behind. Keep up with the exercises on a daily basis. Your notebook will be quite beneficial as you study for Tests or the Final Examination.

N.B.: You must attempt the problems first. You will not master the skills necessary to solve these types of problems simply by reading the solutions manual answers. Consult the answer book only after you have tried (yes, really tried) to work a problem.

Chemistry is difficult but rewarding work. Please see me when you have problems. Don't give up or get behind. **Study chemistry every day.** I will cover much (but by no means all) of this material in class. Working exercises is where you discover (and learn) many exciting details, especially in a problem solving discipline like chemistry. Recommended exercises from our textbook are given below;

*******I SUGGEST YOU WORK ALL THE NUMBERED EXERCISES! *******

REMEMBER:

1. **Don't get behind!** This course moves quickly, and it's hard to play catch up.
2. Play with lots of problems. Form small study groups with your peers. Everyone needs practice, and problems show you where you need more work. If you cannot solve homework problems without help, you won't be able to do them for the OWL2 homework, tests, or exam.
3. Most OWL2 and some test problems will be taken directly from these end-of-chapter exercises with, perhaps, some slight alteration of the numbers.

4. OWL2 details

The problems available on OWL2 are taken from the numbered exercises located at the end of each chapter. Each chapter will open around the time we are scheduled to discuss that chapter in class. The assignments will be visible for several weeks at which time they will close and your score will be transferred into the ANGEL Gradebook. All successfully completed problems will earn points for a maximum of 20 points per chapter. Of the eleven chapters available the best ten (10) scores will count toward your course grade (i. e., you get to drop your lowest OWL2 chapter score). Please see me if you have difficulty registering onto the OWL2 site or if you have specific questions about the exercises. The OWL2 site will work best with the Firefox browser.

The CLASS KEY for this section of **CHM2045_0183** is: **E-24YE4HN5CXJUP.**

To contact the OWL2 help line please call 1-800-354-9706 {option 5} or 1-800-648-7450
http://www.cengage.com/support

Guidelines for written materials

An original review of several articles in a recent issue of Chemical and Engineering News is required for this course. Specifics are given below.

The C & E News Review paper is due 28 October.

C & E News Review Paper (150 points):

The review paper shall consist of a 8 to 10 page summary and review of **three (3)** separate articles from **one** recent issue of Chemical and Engineering News (C&E News). I will make back issues available for your use during the second week of class.

Indicate, **on a cover page**, your name and class section, the date of the C & E News issue and the title & page number(s) of each of the three articles you selected. Borrowed issues of C & E News are to be turned in along with your paper. Papers must be typed and arranged according to an acceptable style such as those given in the Modern Languages Association [MLA] guide or the American Psychological Association [APA] Publication Manual.

I want you to separately summarize three articles from one issue of C&E News that are of interest to you and give a short discussion of how and why these articles (or topics) are (or should be) of interest to society at large. I expect you to find some related information from another source (encyclopedia, library books, internet, newspaper, etc.) to include in your reviews. This will require some library research on your part. [Ratio of internet site references to traditional book or journal references can be no more than 1:1.] You are expected to have at least three outside references in your final paper, to be assembled at the end using an appropriate reference citation style. Internet URL's must be completely listed and date of last visitation noted. [See APA manual.]

Usually C&E News presents a lengthy main article in each issue, which provides a detailed look at a particular issue, but you may also select topics from the Government, Business, or Science/Technology sections or even the Concentrates sections that gives short paragraphs on recent discoveries or press releases. It will help to read over the entire issue before selecting your three articles. Blend each summary with a discussion of the topic in a wider (societal) context. Remember to use appropriate guidelines in presenting all outside (referenced) materials.

N.B.: *My purpose is not to make judgments for you, my student, but rather to expose you to knowledge, truth, and beauty in the natural world, and to reveal the methods of science in such a way as to make the process of your future decision making so intense that you can only escape by thinking*.