

CHEMISTRY 116 - Fall 2021
Dr. Audrey Dell Hammerich
5 - Week of September 19
Bonding Concepts, Lewis Structures, and VSEPR

NOTE: Our first exam will be on Monday, September 21 from 12:00 - 12:50 pm. The exam covers Chapters 1-4 of the Zumdahl text, omitting 4.7. You should bring a calculator.

NOTE: Lab reports for labs having a cover sheet will no longer be accepted if the cover sheet entries are not typed and if a cover sheet is not included in the lab report (first page of report).

NOTE: Due to the exam on Monday there will be no quiz on Friday.

NOTE: H_Exp 5 lab report due on Friday (extended due to exam).

NOTE: We are omitting Chapters 13.4 - 13.8 in the Zumdahl text. We also are not considering the *s, p, d, f* designation of electron configuration. In Z Chapter 12.15 we are only emphasizing the periodic trends.

LAB ASSIGNMENT: H_Exp 6: Preparing Standard Acid and Base; LM: Calibration of a pH Meter and H_Exp 7: Using a pH Electrode for an Acid-Base Titration (H 11-5, 11-6, 15-5). Work is done with a lab partner assigned by your TA. One student does H_Exp_6 and standardizes the ~ 0.1 M NaOH and ~ 0.1 M HCl and the other will perform the LM pH meter calibration and H_Exp_7 using the standardized solutions. Whichever lab partner finishes first should help the other so that the entire experiment can be completed in the allotted time. Note that the **unstandardized** solutions can be used in H_Exp_7 to obtain the equivalence volumes even before the exact molarity is known. The actual molarities can be determined after lab. Due to the exam on Monday you do not need to submit a prelab before the lab period begins. However both lab partners need to write in the prelab section of their notebooks their calculation for the volume of ~50 wt% NaOH needed to prepare a liter of 0.1 M NaOH and the volume of ~37 wt% HCl needed to prepare a liter of 0.1 M HCl. Lab partners should check each other's calculation and **show your calculation to your TA before the experiment is begun**. By the end of the week the student doing H_Exp_6 will turn in a prelab for their part of the experiment and similarly for the lab partner doing H_Exp_7. All data will be the same for both lab partners but the lab reports, including the plots, are done individually. Each student will need to discuss their part of the experiment with their lab partner so that the procedures and objectives of H_Exps 6 and 7 are clearly understood by both students.

LECTURE ASSIGNMENT: Online OWL assigned homework due on Monday, September 27 at noon except "W" problems are due Friday, September 24 at noon.

Monday, September 20

Exam I

Wednesday, September 22

Reading Assignment: Z Ch 12.15, 13.1, 13.2, 13.4 (omit *s, p, d, f* designation of electron configuration - work with the group numbers of main group elements instead) [overview of periodic table: metals, nonmetals, semimetals (metalloids), groups emphasizing periodic trends in **ionization energy, size of atoms, ions, electron affinity, electronegativity, ionic and covalent bonding**]; Chapter Z 13.7, 13.9 - 13.12 (review) [covalent chemical bond, **Lewis structures**, understand **formal charge and resonance** - ignore valence shell expansion until Week 6]

Friday, September 24

Reading Assignment: Z Ch 13.10 - 13.13 (review) [continuation of simple Lewis structures with no more than 8 electrons about any atom; introduction to **VSEPR** - valence shell electron pair repulsion, **electronic geometry** and **molecular geometry** (shape), steric number; ignore 5 and 6 electron pairs about a central atom until Week 6] H Ch 18-1-18-4 [know the basics of spectrophotometry and the application of **Beer's law**, what electromagnetic radiation is, what a wavelength of light is]