Syllabus for Chemistry 101, Fall 2017

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Required Materials

- General Chemistry: Principles and Modern Applications, by Ralph H. Petrucci, et.al., © 2017 ISBN-13: 978-0-13-293127-1 with MasteringChemistry™ with full e-text and electronic student solutions manual (Course ID: **MCMILLIGANCHEM101FALL2017**)
- Lab Manual for Chemistry 101, Department of Chemistry, Los Angeles Valley College, © 2017. Download from: http://goo.gl/XXbIRv
- HGS Molecular Model Structure Kit, available or online (at http://goo.gl/GfQUFh: look for 1005A (works well for 101/102 and really well for 211/212))
- Safety in Academic Chemistry Laboratories, Vol. 1, Published by the American Chemical Society: ISBN 0-8412-3863-4. Download from: http://goo.gl/xtVyZ2.
  This is required reading ***before*** any laboratory work is started.
- Scientific Calculator (it must be capable of scientific notation and logarithms)
- Safety Goggles (they must be the type that completely covers your eyes with the elastic band, ***no shop goggles***!).

Student Learning Outcomes

Solve chemical problems involving gases, solutions and energy.

If you are a student with a disability requiring classroom accommodations, and have not contacted SSD, do so in a timely manner. SSD is located in the Student Services Annex, Room 175 or call SSD at (818) 947-2681 or TTD (818) 947-2680 to meet with a SSD counselor. If SSD has already sent the memo to instructor confirming accommodations required by student for this class, please meet with me to discuss arrangements.

NOTE: If you stop attending a class (or wish to drop a class) on or before November 19, 2017 for Fall Semester 2017, you must drop the class yourself – officially – over the Internet. Failure to do so may result in a grade of "F" in that class.

Course grading

There will be no extra credit given! The time to start worrying about your grade is now, not in the 12th week of the semester. The grading in this course is on a straight scale.

90% - 100%	A	60% - 69.9999…%	D
80% - 89.9999…%	B	<60%	F
70% - 79.9999…%	C		

Any or none of these borders may change at the end of the semester at my discretion. ***There will be no curve!*** First, there are not enough students to have a curve; you need at least 200 students to have any type of bell curve. Second, your grade in this class should ***not*** depend on the students who are in the class with you.

Distribution of points in the course

During the course of this semester you will also have 3 90-minute exams worth 150 points each (a total of 450 points). The final exam is worth 300 points. The labs are worth a total of 753 points. The Reading Journal is worth 150 points (50 points for each submission). The MasteringChemistry™ assignments will be worth 500 points. At the end of the semester, if ½ of your final exam score is larger than the lowest of your mid-term exam scores, it will replace the lowest mid-term exam score.

Exams	450
Laboratory	753
MasteringChemistry™	500
Final exam	300
Total	2003

Final Exam

The final exam for this class is on Wednesday, 14 December, 2017 at 10:30 a.m. to 12:30 p.m. No make-up finals will be given after this date. **You should start studying for your final exam today!**

Cheating

Cheating, representing someone else's work as your own or using materials or references that are not allowed, will not be tolerated. Students caught cheating will receive a zero for that assignment. If you feel the need to cheat, please do not take this class. Please refer to the Student Code of Conduct in the college catalog.

Attendance

You are expected to attend all class sessions. If you miss more than the equivalent of a week of classes without a valid excuse (illness, etc.) you will be excluded from the class.

Cell Phones

No cell phones will be on while class in session. If your cell phone rings during class, you will be asked to leave the class and this will count towards the week of absences as described above.

What is expected of you…

I. This is a college level course. As such, it requires 2-3 hours of work outside of class for every hour in class. This class meets approximately 10 hours a week so you should study at least 20 to 30 hours a week outside of class (this is a minimum, you will require more time if you are having difficulty with the material).
II. I expect the students in my class to put forth the effort required for them to learn the material. I am here to help you learn the material. I cannot and will not learn it for you.
III. I expect you to ask me any questions you have or to further explain what it is you don't understand.
IV. I expect you to use the office hours to your advantage. I have office hours scheduled (see the first page) so that you can have the opportunity to ask me questions outside of class. You can also ask questions during lab periods or via e-mail.
V. I expect you to do the suggested study problems listed at the end of this syllabus. If you do not do at least all the suggested problems, you cannot expect to do well on the exams. See also the explanation of the method for studying with the suggested problems at the top of that page.
VI. I expect you to treat me with respect.
VII. I expect you to follow the rules set forth in this class and on this campus.

What you can expect from me…

I. You can expect me to do the best I can to explain the material to you. If you do not understand it the way I am presenting it, challenge me to use my creativity to explain it in a different way so that you do understand it.
II. You can expect me to be clear in what my grading policies are. They are laid out for you in this syllabus.
III. You can expect me to get assignments graded and back to you in a timely manner. I will try to get them back to you within a week.
IV. You can expect me to be fair in grading your assignments. If you think something is unfair, ask me about it and I will explain my reasoning to you.
V. You can expect me to treat you with respect. If I appear to be disrespectful to you, let me know so I can correct the problem.

Laboratory Work

The laboratory work for this class is worth a total of 749 points of your overall grade (see lab schedule above). In the laboratory, when any lab work is being performed, everyone is expected to wear eye protection. If I must remind anyone of this rule more than twice in a given lab period, they will be removed from the lab with the loss of points for that lab. ***You are expected to come to lab prepared.*** This means that you are to have read the introduction to the lab and the directions for the lab. If you have any questions about the lab, feel free to ask me. ***Do not ask me what you are supposed to do in the lab.*** That is why you have a lab manual. I will, however, answer any questions clarifying the instructions in the lab manual. Labs are due at the beginning of the next lab period when you walk in. Late labs will not be accepted.

Exam Schedule (90 minutes each)

1. Exam 1 covers the first five chapters and chapter 26 of the text, redox and the relevant lectures and will be on Wednesday, 20 September 2017. ***This exam is largely a review of the concepts in Chemistry 60/68. I expect all of you to do well on it.*** For this exam you will be expected to be able to:
    a. Solve problems using dimensional analysis
    b. Solve problems using isotopes and nuclear structure
    c. Name compounds and write formulas for ionic and binary covalent compounds
    d. Name compounds and write formulas and structures for organic compounds
    e. Balance chemical equations
    f. Calculate molecular and formula masses
    g. Determine mass percentages from chemical formulas
    h. Determine empirical and molecular formulas from mass percentages and combustion analysis data
    i. Solve chemical problems involving the mole concept
    j. Write molecular, ionic and net ionic equations
    k. Solve chemical problems involving concentration units
    l. Balance oxidation-reduction reactions
2. Exam 2 covers chapters 6 and 7 (remember that chemistry is a cumulative subject) and will be on Wednesday, 25 October 2017. For this exam you will be expected to do all of the above and:
    a. Deduce the properties of a gas after changes in conditions
    b. Solve chemical problems involving the Ideal Gas Law
    c. Determine the partial pressure of a gas in a mixture of gases
    d. Determine the total pressure of a mixture of gases
    e. Calculate the heat of reaction under constant pressure and constant volume
    f. Solve thermochemical problems
3. Exam 3 covers chapters 8 through 11 (remember that chemistry is a cumulative subject) and will be on Wednesday, 22 November 2017. For this exam you will be expected to do all of the above and:
    a. Calculate the difference in energy levels given the wavelength of light emitted by a hydrogen atom or hydrogenic ions
    b. Write the electron configuration of an atom or ion
    c. Construct the orbital diagram of an atom or ion
    d. Determine the quantum numbers of an electron in an atom
    e. Construct the Lewis Electron Dot Diagrams for ionic and covalent compounds
    f. Calculate the bond order of a molecule
    g. Calculate the approximate heat of reaction from bond energies
    h. Determine the molecular and electron group geometries of molecules
    i. Determine the hybridization of the central atom of molecules
    j. Determine the polarity of molecules
    k. Construct the molecular orbital diagram of the second row homonuclear and heteronuclear diatomic molecules
    l. Determine bond order and magnetism from the molecular orbital diagram

Reading Journal

You should make the most of your textbook; you paid a lot of money for it. Some ways to get the most out of it include reading the text, working the recommended end-of-chapter problems and using the end-of-chapter study guides. My former students will tell you that you should read the book and you have to work the problems.

Keeping a journal is a new (to you) approach to reading your textbook. Buy a 100-page composition notebook and divide the book into three sections. Use roughly the first half of the notebook for section one and then divide the other half about equally. Set aside a couple of pages at the very front for a table of contents. Use one of the smaller sections to keep a vocabulary list; use the other smaller section for a list of equations. As for the big section, this is your Reading Journal.

1. This is how to read a chemistry text book. You probably already know that a chemistry text is not the same as a history text and you can't read it like you would your favorite novel. Before you begin to read a new chapter do the following:
    a. Look at the chapter outline on the first page of each chapter to get an idea of the major topics the chapter covers.
    b. Flip through the chapter page-by-page looking at the section labels, which should be the same as in the chapter outline, the figures and the figure legends. Read the figure legends.
    c. When you get to the end, briefly study the "Chapter Perspective" noting the concepts that you should understand and skills that you should master by the time you finish studying the chapter. This should give you a good idea of what to look for while you are reading.
2. The entries that follow will be your "reading notes." Begin a new page in your Reading Journal. Make sure you have some label to show which chapter the notes refer to.
    a. After skimming the chapter, you should be able to sketch an outline of your own. Write your outline in the Reading Journal.
    b. As you read the first section write a one-sentence summary of each paragraph. When you finish the section, write a single sentence that summarizes the whole.
    c. Remember that equations, data tables, graphs, figures and most pictures are almost always related to the words in the paragraphs on the same page. For each equation, data table, graph, figure or picture, write a sentence or two that explains how it is related to the text.
    d. After reading the first section of the chapter, work out the practice problems for that section at the end of the chapter. Do as many of these problems as you need to be sure that you are comfortable with the material and the problems that can be asked.
    e. As you begin to read the second section, do the same. Keep doing this for each section.
    f. When you finish the whole chapter, write a brief paragraph summary. Please do not paraphrase the section summary!
    g. Also, create an "exam" from the additional and cumulative skills problems to test yourself with the material for that chapter. Pick 6 or 7 problems and work them as you would for an exam. Set a timer for 90 minutes and allow yourself to only use your periodic table, 3"x5" index card and your calculator. Get answers for all of the problems and check them only after the timer has expired.
3. A word of advice, this Reading Journal will be more beneficial if you write your own paragraph (in your own words summarizing what you thought was most important) than if you copy or paraphrase the section summaries found in the text.
4. Make a habit of reading a bit each day and record your entries as you go (daily or weekly). ***Do not*** wait until the night before the exam; it is not time well-spent and will defeat the purpose of the journal.
5. Create a section in your Reading Journal where you keep a list of vocabulary words with their definitions.
6. Set aside a few pages for a list of important formulas. Write down the mathematical formula, what it is used for and what each of the terms in the formula means.

Lecture and Laboratory Schedule for Chemistry 101, Fall 2017

Week of	Lecture Chapters	Exams and Holidays	Monday/Tuesday Lab	Wednesday/Thursday Lab
28 Aug	2, 3 & 26		Lecture	Lecture
4 Sep	26 & 4	***Monday Holiday*** 8th last day to add	***Monday Holiday*** Tuesday Lecture	Lecture Balances (5 pts)
11	4 & 5	10th **L**ast **D**ay **T**o **D**rop (LDTD) w/o fees or getting a "W"	Lecture Safety and Check-in (5 pts)	Lecture Graphs (50 pts)
18	5 & 6	***Wednesday, Exam 1***	Metathesis Reactions (108 pts)	Nickel(II) Salt (Day 1)
25	6		Nickel(II) Salt (Day2)	Nickel(II) Salt (Day 3) (42 pts) Copper Chemistry and Redox Reactions (Day 1)
2 Oct	7		Copper Chemistry and Redox Reactions (Day 2)	Copper Chemistry and Redox Reactions (Day 3) (55 pts)
9	7		Determination of the Gas Constant (24 pts)	Molecular Mass of a Volatile Liquid (25 pts)
16	7		Internal Energy Problems (25 pts)	Bomb Calorimetry (31 pts)
23	8	***Wednesday, Exam 2***	Hess' Law of Heat Summation (49 pts) Prepare NaOH	Lecture (no lab)
30	9 & 10		Atomic Emission Spectroscopy (69 pts)	Determination of Percent KHP and Equivalent Mass (Day 1)
6 Nov	10		Determination of Percent KHP and Equivalent Mass (Day 2)	Determination of Percent KHP and Equivalent Mass (Day 3)
13	11		Determination of Percent KHP and Equivalent Mass (Day 4)	Determination of Percent KHP and Equivalent Mass (Day 5) (65 pts)
20	11 & 12	***Wednesday, Exam 3*** ***Thursday Holiday*** 19th LDTD w/ a "W"	Molecular Models (81 pts)	Wednesday Lecture ***Thursday Holiday***
29	12		Vapor Pressure and Enthalpy of Vaporization (53 points)	Unit Cell Geometry (61 pts)
4 Dec	12		Check Out (5 pts)	Review

The capacity to learn is a gift. The ability to learn is a skill. The willingness to learn is a choice.

Suggested Study Problems from General Chemistry: Principles and Applications, 11th edition.

Chemistry 101 is the second class in the three semester (Chem 68, 101, 102) series. Students are expected to come into Chemistry 101 with a solid foundation in algebra, geometry, and basic chemistry. For each chapter, you should always study the key terms and do as many exercise and practice problems from each assigned section of the chapter as is needed to learn the material. This would be a good time to also review and perhaps revise and supplement your class notes. When you think you have mastered the chapter, give yourself practice quizzes using test format (timed, no notes) using 6 to 7 problems from the list below (which come from the Integrative and Advanced Exercises). Your last self-quizzes should contain a mixture of problems from all the chapters.

Exam 1

Class time will not be spent specifically on material from chapter 1 from the Petrucci text. However, students will be expected to know (and will be tested on) the following topics from that chapter: significant figures, derived units, SI units and conversions, key terms, metric prefixes

Students are expected to be skilled in and routinely use the dimensional analysis method of problem solving

Chapter 2: 71, 72, 76, 78, 80, 81, 82, 85
Chapter 3: 83, 88, 89, 90, 91, 93, 95, 99, 102, 106, 108
Chapter 26: 75, 82, 85, 86, 90 (a & c only)
Chapter 4: 93, 94, 95, 96, 98, 99, 101, 105, 110, 113, 117, 123
Redox: Problems in the Lab Manual
Chapter 5: 70, 72, 77, 78, 79, 83, 88, 89, 91

Exam 2

Chapter 6: 94, 95, 96, 98, 99, 101, 108, 114, 118, 119
Chapter 7: 95, 97, 102, 105, 107, 110, 113, 114, 121

Exam 3

Chapter 8: 93, 96, 101, 102
Chapter 9: 55, 56, 57
Chapter 10: 101, 103, 104, 109, 110, 116, 120
Chapter 11: 45, 51, 52, 54, 61

FINAL EXAM

Cumulative (includes all 13 chapters)
Chapter 12: 90, 93, 100, 103, 104, 106

Declaration of Understanding

I hereby declare that I have read the syllabus for this class and understand the rules of this class. I also understand that any failure on my part to follow the rules of this class will result in the above mentioned penalties.

Print Name	Sign Name	
	Chemistry 101	19664
Date	Class	Section #
E-mail address (required in order to receive grade updates)		

** Failure to complete and turn in this page by 13 September 2017 will result in a deduction of 20 points from your overall grade. These points are forfeit and cannot be made up at a later time. **