Preparing a Comprehensive Syllabus

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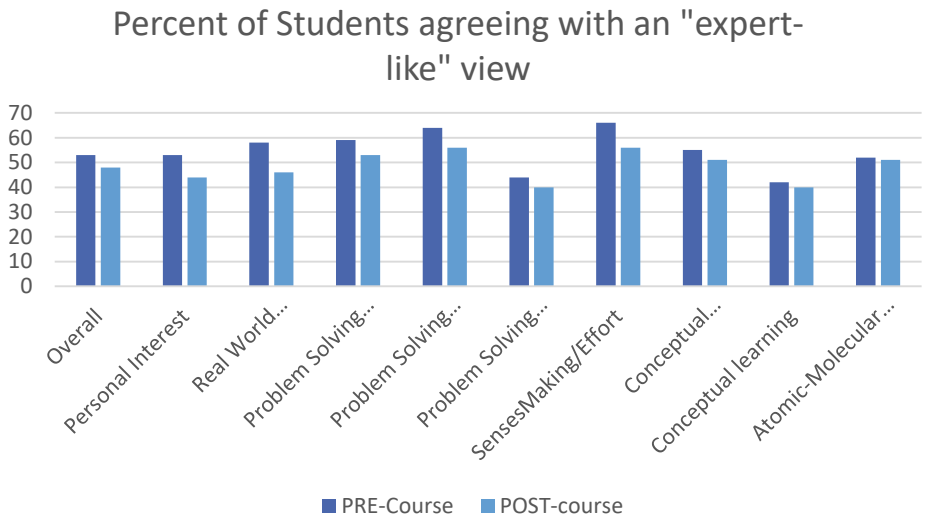
With help from Christov Roberson

Gary Gutting, “Why Do I Teach?” *New York Times* 5/22/2013

College education is a proliferation of . . . possibilities: the beauty of mathematical discovery, the thrill of scientific understanding, the fascination of historical narrative, the mystery of theological speculation. We should judge teaching not by the amount of knowledge it passes on, but by the enduring excitement it generates. Knowledge, when it comes, is a later arrival, flaring up, when the time is right, from the sparks good teachers have implanted in their students’ souls.

Assessing attitudes

Do students believes about a discipline become more “expert-like” or “novice-like”?



Wendy K. Adams , Carl E. Wieman and Katherine K. Perkins , Jack Barbera, “Modifying and Validating the Colorado Learning Attitudes about Science Survey for Use in Chemistry”**,** *J. Chem. Educ.*, **2008**, *85*, 1435.

Designing Your Own Course Using “Backward” Design

“Standard” Course Planning

Choose textbook/readings

↓

Write syllabus

↓

Write/Revise lectures
& prepare PowerPoints

↓

Write assessments
(exams/assignments)

Wiggins, G. and McTighe, J., (2000), Understanding by Design: Englewood Cliffs, NJ; Prentice Hall

"Standard" Course Planning

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Write assessments (exams/assignments)

vs. Backward Design

Formulate broad learning goals

↓

Define specific, measurable learning objectives

↓

Design/write assessments

↓

Develop class content and activities; choose readings

Wiggins, G. and McTighe, J., (2000), Understanding by Design: Englewood Cliffs, NJ; Prentice Hall

Learning Goals

- A simple syllabus tells students what ***you***, the instructor, are going to talk about during your course.
- Learning goals tell students what ***they*** should be able to do after completing the course, and what level of understanding ***they*** should expect to gain.

Setting Learning Goals and Objectives

- Goals: What do you want students to get out of the course

- Learning Objectives: What specific skills do you want students to obtain? Be specific about what your course is covering

Objectives:

Expand on your previous knowledge of chemistry, focusing on problem solving skills and analytical thinking

learn current applications of the principles taught in introductory chemistry

learn analytical laboratory techniques and laboratory problem solving skills

Course Schedule

Course Schedule:

Unit 1: The Analytical Process : Making Good Measurements

Laboratory Experiments:

Introduction to laboratory glassware

Quantification of riboflavin: Introduction to calibration curves, absorbance and fluorescence

Atkins: Fundamentals A, C, D, E, F, G, H, I, L, M, Chapter 4 Properties of Gasses, and Supplemental Material.

Unit 2: Spectroscopy: What can we learn about the structure of atoms? How can we use spectroscopy to make good measurements?

Laboratory Experiments:

Analysis of the Hydrogen Line Spectra

Atkins Chapter 1 and 2

Unit 3: The bonding and shapes of molecules. Intra and Intermolecular Forces

Laboratory Experiment:

Introduction to Molecular orbitals

Synthesis of Liquid Crystals (2 weeks)

Atkins Chapters 3,4 and 6.

Detailed Learning Objectives

Unit 1: The Analytical Process Making Good Measurements

Monday	30-Jan	Introduction to the course; Conversions between units and scientific notations	Introduction; A.1
	Jan 30 & 31	Safety Lecture and Check in	
Wednesday	1-Feb	Significant Figures and types of error	A1, Appendix 1B, 1C
Friday	3-Feb	Concentrations of Solutions	A1 G3, G4
Monday	6-Feb	Concentrations of Solutions and Calibration Curves	Handout
	Feb 6 & 7	Calibration Curves and Measurement	
Wednesday	8-Feb	Spectroscopy	Handout

Conversions between units and scientific notations: You should be able to convert between different types of units. You should memorize and be able to manipulate the SI unit prefixes μ, m, c, and k. *Atkins A1, Appendix 1B. Practice Problems Set 1, Atkins A17, A19, A23, Sapling Homework Set 1, Problems 4-7*

Significant Figures: Why are significant figures important? You need to know how to determine the number of significant figures in ALL measurements. This includes not just the rules for

A Syllabus needs to include course content!

Chemistry 105aL Spring 2016 9 am lecture

http://chemmac1.usc.edu/chem105a/

Lecturer	Lab Coordinator	Course Coordinator
Prof. Thomas Bertolini SGM 310 (213)740-3257 tbertoli@usc.edu Office hours: M1-3, W2-4	Dr. Catherine Skibo SGM 138 (213)740-8265 skibo@usc.edu MW 1:30-3	All questions about course administration are handled via Electronic office hours. Paperwork for Course Coordinator's mailbox may be brought to receptionist in SGM 418. Coord105@chemmail.usc.edu Electronic office hours: MW 1:30-3. Questions emailed during this time slot will be processed first.

CHEM 105a introduces the basic chemical principles that underlie all of the molecular sciences (from materials and nanoscience to medicine and the machinery of biology). It will introduce good lab practice and how to make decisions based on sound data. After this course students will be better prepared for their continuing studies and will have an understanding of molecular principles coming up in everyday life.

Lectures: 9 MWF in SGM 124, quiz period in SGM 123

Textbooks: ***Chemistry*** (2nd custom edition for USC, of the 3rd edition text) by Tro (required, no substitutes); package from USC Bookstore includes for free the eText and Mastering Chemistry. ***Solutions Manual*** (optional).
Laboratory Manual (required, purchase in USC Bookstore).
Calculations in Chemistry by Dahm (optional, strongly suggested).

Calculator: To have a level playing field, CHEM 105 requires everyone use the exact **same** calculator on exams, the **Casio FX-260 Solar**, which is around $10. Sorry, this rule is strictly enforced: no other models or brands of calculators or other electronic devices allowed. *Be sure to practice HW with it prior to exams.*

ages page and the Frequently Asked Questions (FAQ page) on the class website.

s to Remember

	First Day of Classes	
5:00pm	**5 pt bonus** for setting up **class PW**	
)	**assessment test** for all students, 30 min; get room # on grades/exams page using class PW	
	Martin Luther Day	
January 19 (Tu)	**Mandatory Lab Orientation Lecture**	
Jan 20-21 (W-Th)	**Labs begin with Check-in** at your scheduled time. **Be properly attired, bring lab manual.**	
January 29 (F)	Last day to drop without a "W" to avoid tuition charges	
February 09 (Tu)	**First Hour Exam**	Regrade deadline: 12 noon Mon Feb 15
February 15 (M)	Presidents Day	
February 26 (F)	Last day to drop without a "W" but still incurring tuition charges for this class (week 7)	
March 08 (Tu)	**Second Hour Exam**	Regrade deadline: 12 noon Mon Mar 14
March 11 (F)	Midterm Grade Assigned	
March 14-18	Spring Break (Mon - Fri)	
April 05 (Tu)	**Third Hour Exam**	Regrade deadline: 12 noon Mon Apr 11
April 08 (F)	Last day to drop with a "W"	
April 19 (Tu)	**Written Lab Exam**	
April 26 (Tu)	**Fourth Hour Exam**	Regrade deadline: 12 noon Mon May 02
April 27-28 (W-Th)	**Lab Practical in lab rooms**	
April 29 (F)	Last Day of Class	
Friday, May 6	**Final Exam** **8:00 - 10:00 a.m.**	Regrade deadline: 12 noon Mon May 09

Best Practices

More detailed/longer
Positive tone
Emphasizes collaboration
Student-centered

Policy for Absences and Missed Work

Transparent

Fair

Set easily achievable bar

Drop lowest scores

Assessments/Assignments

Due dates
Descriptions
Link to learning objectives
Variety

Clicker Policy

Credit for participation
Credit for correctness
Contribution to grade

Grades

Transparency
Diversity
Distribution
Revision/Redemption
Reduce competition

Grades: Grades in this course are based on four exam scores and weekly problem sets. Your top 4 exam scores will be used to determine final grade. Each exam will be worth 24% of the total and problem sets are worth 4%.

Grades will then be assigned according to the following scale:

X = average of 4 exams (0.96) + homework (0.04%)

X 100 = A+
100 ≥ X > 92 = A
92 ≥ X > 88 = A-
88 ≥ X > 84 = B+
84 ≥ X > 78 = B
78 ≥ X > 72 = B-
72 ≥ X > 66 = C+
66 ≥ X > 60 = C
60 ≥ X > 55 = C-
55 ≥ X > 50 = D
50 ≥ X = F

Because the grades are **not** based on a curve with only a certain percentage of the class receiving any given grade, in principle **the entire class can earn an A.** We encourage collaborative learning and you no not need to worry that studying with other students might improve their grades at your expense.

Sources of Help

Office hours
Teaching Assistants
Recitations
Learning Den
PILOT

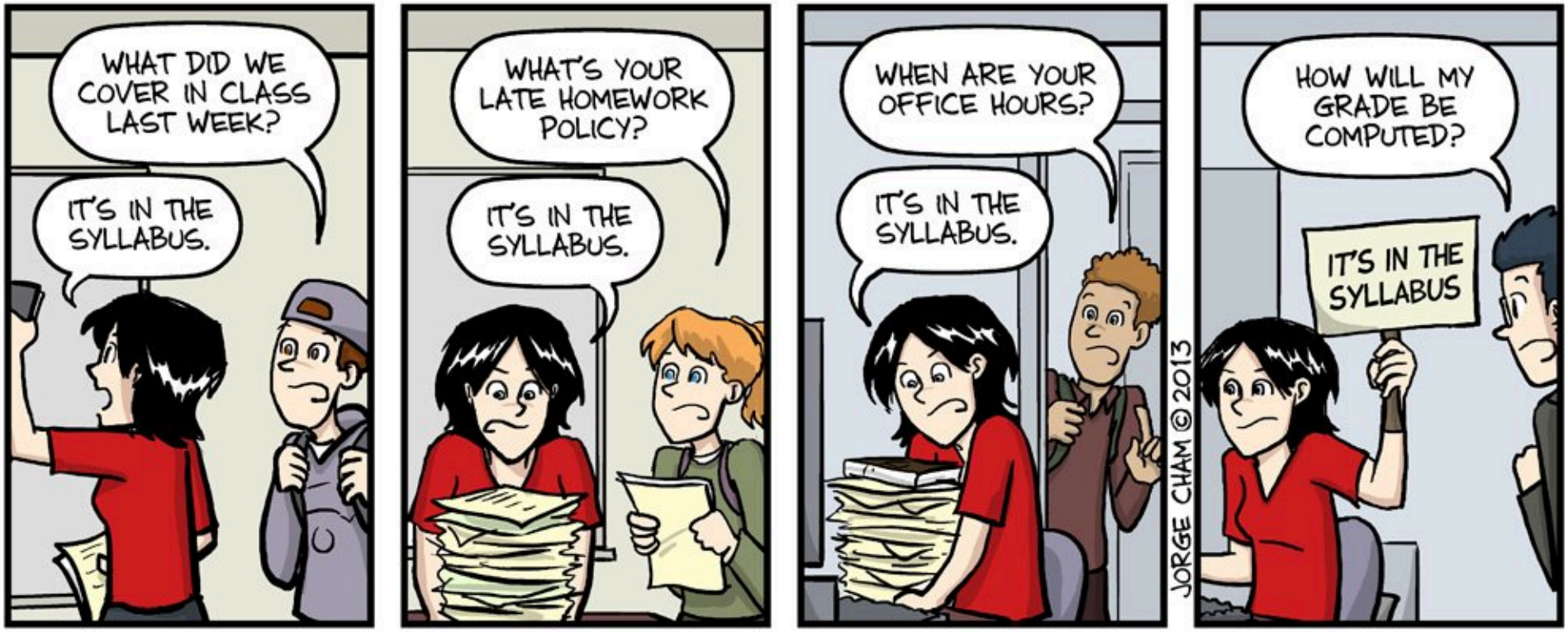
Recommended Statements

Ethics Statement

Disabilities

Copyright Compliance

The information in the syllabus is subject to change at any time for any reason.



IT'S IN THE SYLLABUS

This message brought to you by every instructor that ever lived.

WWW.PHDCOMICS.COM