

**Flipped Course Design  
Increase Learning by Harnessing Technology**

*Indiana University of Pennsylvania*

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## Blended Learning: Theory & Practice

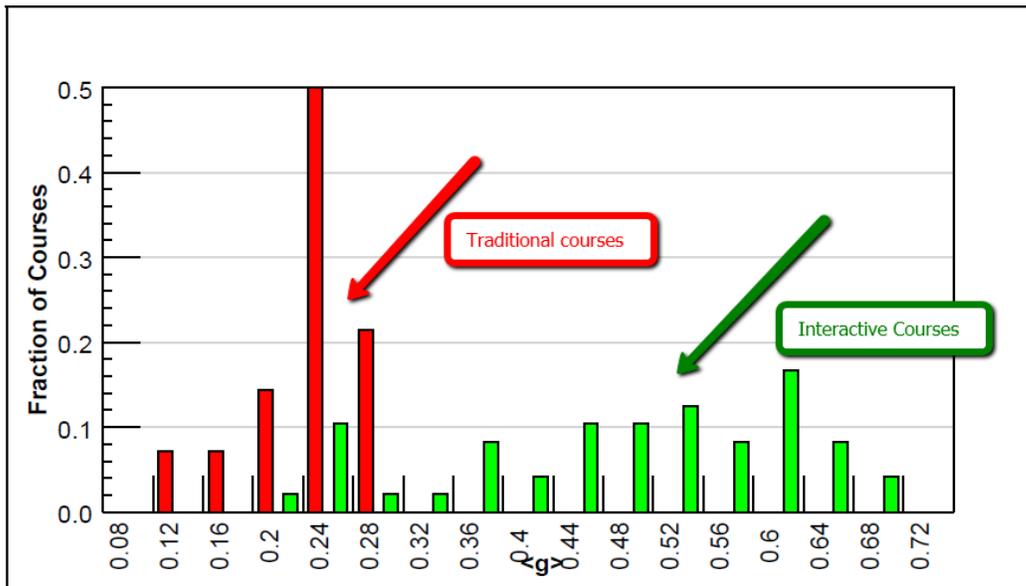
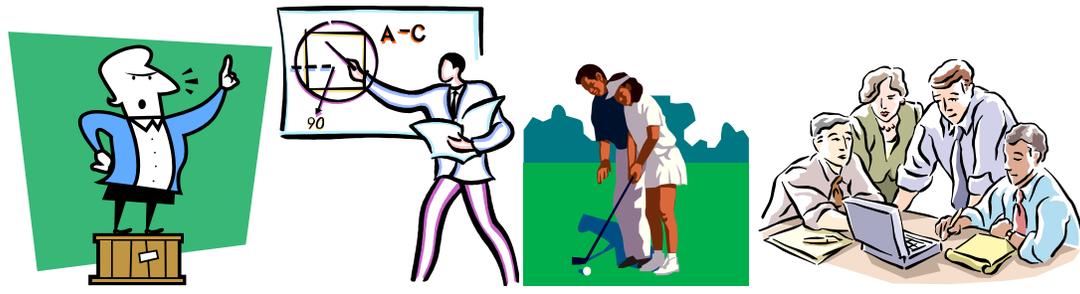
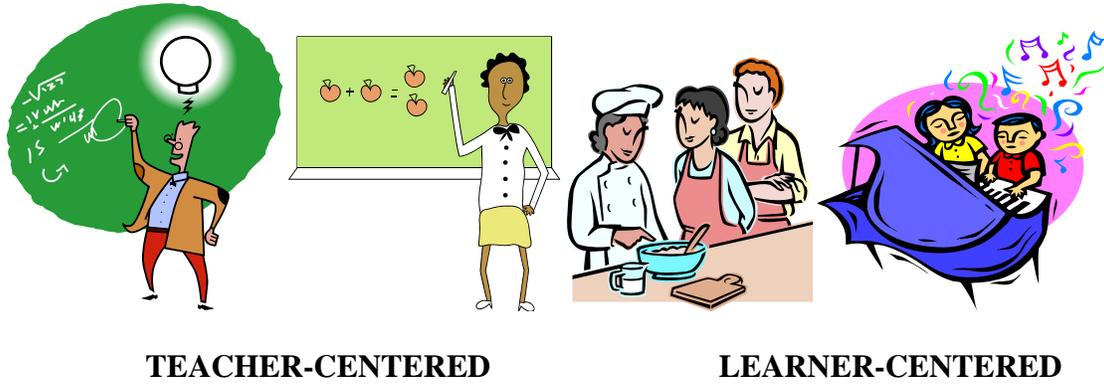
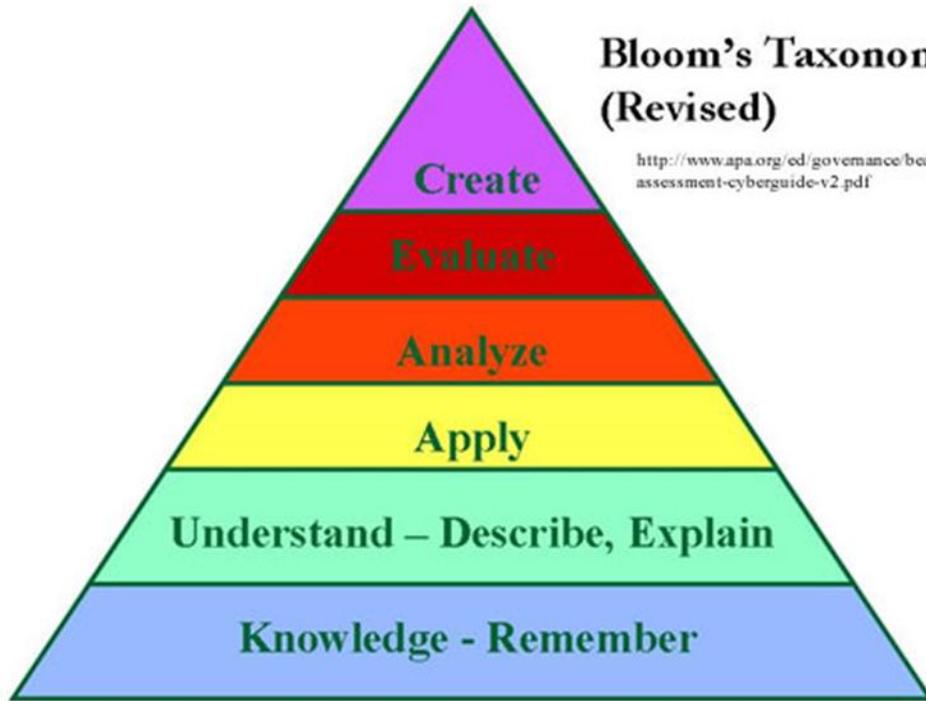


Fig. 2. Histogram of the average normalized gain  $\langle g \rangle$ : dark (red) bars show the *fraction* of 14 traditional courses ( $N = 2084$ ), and light (green) bars show the *fraction* of 48 interactive engagement courses ( $N = 4458$ ), both within bins of width  $\delta \langle g \rangle = 0.04$  centered on the  $\langle g \rangle$  values shown.

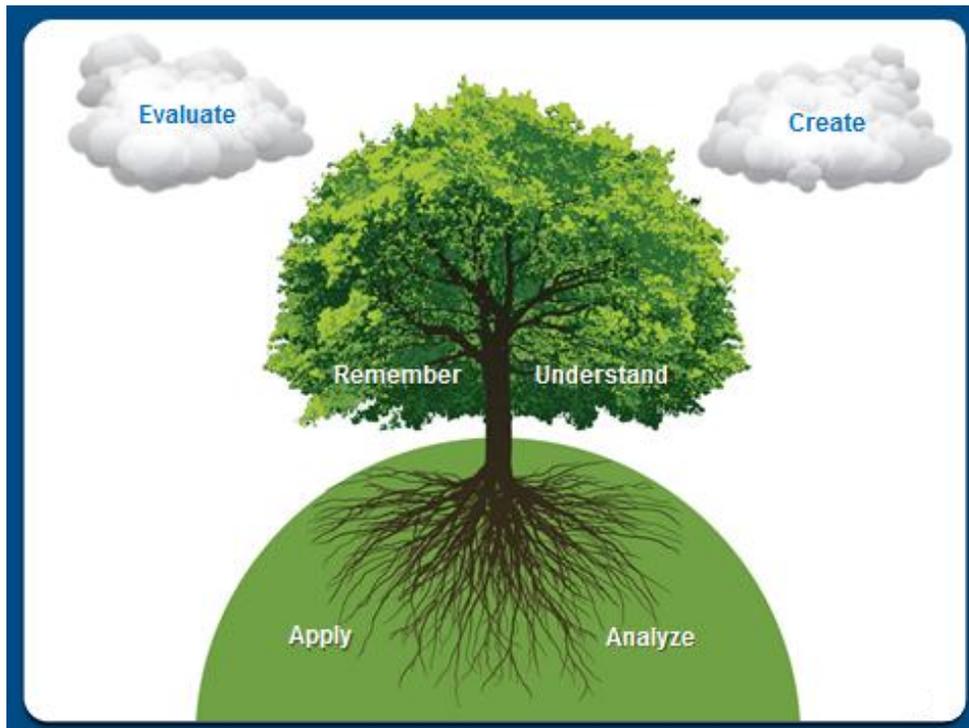
Hake (1998)

## Bloom's Taxonomy (Revised)

<http://www.apa.org/ed/governance/boa/assessment-cyberguide-v2.pdf>



Based on an APA adaptation of Anderson, L.W. & Krathwohl, D.R. (Eds.) (2001)



### Four Types of Course Design

Design	Classroom Environment	Technology
<b>Traditional</b>	= # of F2F hrs.	None/some
<b>Web-enhanced</b>	= # of F2F hrs.	Usually CMS (D2L, BB, WebCT)
<b>Blended (hybrid)</b>	< # of F2F hrs.	CMS plus enhancements
<b>Online</b>	0	CMS, enhancements, and possibly synchronous online

### Examples of Course Design

#### Case Study: General Chemistry

##### Problems

- Poor grades
- Low ratings for course
- Lots of remediation in form of faculty office hours, tutoring center, and review sessions

##### Solution

- Clickers (CPS Pulse, i>clicker, TurningPoint):
- Peer Mentors
- Class Guide with PowerPoints
- Online Quizzes

##### Result

- Average GPA for course 1.66 → 1.97
- Fewer failures from 2.1:1 pass: fail ratio to 2.3:1.
- Student ratings for course and teachers ↑

## Case Study: Shakespeare

### Problems

- Larger class size, 56 instead of 40
- Students not engaged with teacher
- Too much grading of writing

### Solution

- Six, one-hour sections/week with only 9 students/section
- Pre-class writing with clear rubric for grading
- Lectures watched outside of classroom

### Result

- Grades were unchanged
- Students reported greater satisfaction with course
- Instructor time decreased from 15.6 hrs/wk to 12.5 hrs/wk

## Case Study: Nutrition

### Problems

- Too much lecture
- Learning focused too much on facts, students memorizing and forgetting

### Solution

- Reduced class time from 3 hrs/wk → 1.5 hrs/wk
- Increase amount of writing: two papers on diet books (*In Defense of Food* and book selected by the student)
- Online quizzes, dropboxes

### Result

- Students spent more time on task
- Students reported greater satisfaction with course
- Number of pages of writing increased from 0 → ≈ 7

## Mini-Design

### Simplified Plan

1. Choose a Schedule
  - a. Daily: most detailed, most restrictive
  - b. Weekly: still detailed but a bit less restrictive
  - c. Topical: provides some flexibility but risks confusing students
2. Create Learning Goals
  - Use active verbs
  - The LG should be able to help you assess learning
  - The more specific the language the more effective the goal
3. Divide the Content
  - a. Create Opportunities for Students to Learn *Before* Class Starts
    - Utilize on-line resources for lower-level learning
    - If you grade use low-stakes grading
  - b. Create Opportunities for Students to Learn *During* Class
    - Utilize face-to-face time for higher-order thinking
    - Face-to-face is effective for high stakes grading
    - Think about creating collaborative activities
  - c. Create Opportunities for Students to Learn *After* Class Ends
    - Utilize on-line resources for rehearsal and higher-order thinking
    - Consider on-line collaborative activities
    - Grading can be midway between low- and high-stakes
4. Assess Student Learning
  - Consider the learning goals to decide how best to allocate points

## Blended Design Module

<b>Game</b>	
<b>Learning Goals</b>	1.  2.  3.
<b>Before Class</b>	
<b>During Class</b>	
<b>After Class</b>	
<b>Assessment</b>	

## ADDIE

<b>ADDIE Phase</b>	<b>Description</b>
Analysis	Conduct prior assessment to determine learning obstacles and opportunities, e.g., analyze exams to see where common mistakes occur, ask colleagues who teach prerequisite courses or follow-up courses about the type of content students struggle with, and utilize your own experience to determine areas where students seem to get motivated.
Design	Too often in the rush to get to the development step both analysis and design steps are rushed through—big mistake! Design ideas such as storyboarding (where you lay out what an activity or recorded lesson might look like) are critical in helping you develop effectively. Consider evaluation (assessment measures) as you design. Definitely create learning goals before moving onto the next step.
Development	While the first two stages involve much cognitive work this stage involves much manufacturing work. The ideas must now be made concrete. Activities such as developing an online quiz bank or creating homework assignments take significant amounts of time and involve you in the content of the course more than any other stage.
Implementation	Launching the course is always anxiety-inducing—a bit like a stage performance. You'll have opportunities to modify as you progress but the goal should be to have the course perfected before you launch. You need to monitor during this phase to make changes on the fly when necessary.
Evaluation	Blended courses provide instructors with a plethora of ways to assess. An online quiz bank allows an analysis of the most commonly missed questions, a log of student access allows analysis of time spent on the course, and evaluations of assignments and activities (often with online surveys embedded in the course) provides a sense of how learning occurred. Like the first two steps in ADDID you should not rush to complete this step.

## **Analysis of Content in Your Course**

Look carefully through your syllabus. Then consider the following questions.

A. What is the tone of your syllabus? Welcoming, authoritarian, somewhere in between?

B. Imagine you are a student and determine how your grade will be assessed.

C. What are the three most difficult concepts in your course?

D. What are three relatively straightforward concepts in your course?

E. What would you like students to know 5 years after they complete your course?

**Design & Development**  
**“Seven Principles for Good Practice in Undergraduate Education”**

Fill in the chart below by identifying specific activities that you could undertake to improve your course through blending.



<b>Good Practice in Undergraduate Education (Chickering &amp; Gamson)</b>	<b>I could accomplish this by...</b>
1. Encourages Contacts Between Students and Faculty	
2. Develops Reciprocity and Cooperation Among Students	
3. Uses Active Learning Techniques	
4. Gives Prompt Feedback	
5. Emphasizes Time on Task	
6. Communicates High Expectations	
7. Respects Diverse Talents and Ways of Learning	



## Technology Tools for a Blended Course

<b>CMS</b>	ANGEL Blackboard
<b>Clickers</b>	i>clicker Turning Point Poll Everywhere Top Hat Monocle
<b>Presentation/Screen Capture</b>	Camtasia SnagIt Jing
<b>Recording</b>	Podcasts/Vodcasts Audacity
<b>Communicating</b>	Chat Room Twitter
<b>Reports</b>	Google Docs Wikis ePortfolio
<b>Synchronous Learning</b>	Elluminate Live/Wimba Adobe Connect Wiifiti
<b>Videos</b>	YouTube TED Talks iMovie
<b>Social Media</b>	Facebook Linked In
<b>Collaborating</b>	iJot VoiceThread Blogs (moonfruit, pbworks, weebly, blogspot) Chat Rooms

## Syllabus CHEM 110

CHEM 110 (GN) **CHEMICAL PRINCIPLES** (3) Basic concepts and quantitative relations. The following combinations of courses must be taken to receive General Education credit in chemistry: CHEM 110 GN (or CHEM 104 GN) and CHEM 111 GN; CHEM 112 GN and CHEM 113 GN. Prerequisite: satisfactory performance on the Chemistry and Math FTCAP tests - i.e., placement beyond the level of CHEM 101 and MATH 022; or CHEM 101 , and MATH 022 or MATH 041

Section	Time	Instructor	Office	Office Hours
001	TR 10:50 – 12:05	Jane Doe	Room 1	TR 1:40 – 2:55

**Email:** xxx@psu.edu

**Office Phone:** 555-555-5555

**Chemistry Mentors:** John Doe ([xxx@psu.edu](mailto:xxx@psu.edu)); Jane Doe ([xxx@psu.edu](mailto:xxx@psu.edu))

**Textbook:** “Chemistry: The Central Science” 11<sup>th</sup> Edition; Brown, LeMay, Bursten and Murphy; Pearson Prentice Hall Publishers

*Note:* If your major requires only one semester of chemistry, buy the custom edition of the textbook for Penn State University – Berks Campus. If you are taking two semesters of chemistry, buy the full textbook. If you are not sure how much chemistry you will need, buy the full textbook (it’ll be cheaper in the long run!).

**Other Materials Needed:** non-graphing calculator; student response transponder (aka “clicker”) – if this is not by the textbooks, ask at the customer service desk of the bookstore.

<b>Grading Policy:</b>	Pre-class Work (10 @ 5 pts each)	50 pts
	Clicker Points	60 pts
	Quizzes (10 @ 20 pts each)	200 pts
	Exam 1	100 pts
	Exams 2 & 3 (150 pts each)	300 pts
	Final	<u>200 pts</u>
		910 pts

**Grades:**

Letter Grade	Percent	Point Range
A	92 – 100%	837 – 910 points
A-	90 – 91%	819 – 836 points
B+	88 – 89%	800 – 818 points
B	82 – 87%	746 – 799 points
B-	80 – 81%	728 – 745 points
C+	78 – 79%	710 – 727 points
C	70 – 77%	637 – 709 points
D	60 – 69%	546 – 636 points
F	less than 60%	less than 546 points

This course is **not** graded on a curve so your performance is NOT being judged against anyone else in the class. You need to develop proficiency in understanding chemistry and your grade is based on how well you meet the course objectives. You will be working in groups throughout the semester during class time so you should strongly consider finding one or more people you want to study with outside of class. Research shows that students who study together often get higher grades than students who study alone.

**Practice Exercises:** You should plan to complete all the practice exercises listed on the syllabus and in your class guides. The practice exercises will provide you with examples of the types of questions that you will see on the exams.

**Pre-Class Assignments:** For almost every class period you will need to access information on ANGEL and complete work prior to class. You will have a worksheet that you need to fill out and submit on ANGEL, due at 11:55 PM the day before class (so Tuesday's assignment will be due at 11:55 PM Monday night, and Thursday's assignment will be due at 11:55 Wednesday night). If both of the assignments due in a week are completed, you can receive a maximum of 5 points. If only one assignment is completed, the maximum number of points you can receive is 3.

**Clicker Points:** Each class week (except for weeks with exams) you will be able to earn a maximum of 5 points for bringing your clicker to class and participating in the in-class problem solving. You do not have to get the questions correct in order to earn these points, however, you must be giving the problems an honest effort. If you do not bring your clicker to class one day of the week, the maximum number of points you can earn is 3.

**Quizzes:** There will be a quiz each week that will open on Thursday at 1:30 PM and must be completed by the following Monday at 11:55 PM. You can take each quiz three times and only the highest score will count. There will be 11 quizzes over the course of the semester, and only your best 10 quizzes will count towards your final grade.

**Exams:** Three exams will be given that cover information from the textbook, practice exercises, and quizzes. The first exam will be worth 100 points, and the second and third exams will be worth 150 points each.

**Final:** A cumulative final exam will be given which means that you need to study almost every day in order to place the information in long-term memory (as opposed to the short-term memory storage that will result from cramming). Although only the final is cumulative, chemistry builds upon itself and it will be difficult to do later material if you do not understand the early exercises.

**Tips:** Chemistry is very much a "learn by doing" subject. Because of this, you must work in the course in order to do well. That means you should read the textbook, work on the online activities, and do the homework problems until you understand! Then you should do extra problems to test your understanding. The more problems you do, the more likely you are to succeed. Small misunderstandings in the course can also rapidly become major problems. If you're not sure of something, speak with one of the chemistry mentors, or go to the learning

center (Room 1), and come to office hours. You'll be amazed by the difference in your understanding and performance!

**Academic Integrity (University Policy 49-20):** Academic integrity is the pursuit of scholarly activity in an open, honest, and responsible manner. Academic integrity is a basic guiding principle for all academic activity at the Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment not to engage in or tolerate acts of falsifications, misrepresentations or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

Date	Section	Topic	Quiz	Practice Exercises
Tues. 8/26	1.2 - 1.6	Matter/Units/Uncertainty/ Dimensional Analysis		1: 11, 15, 25, 27, 35, 39, 43, 45, 47, 53
Thurs. 8/28	2.3 - 2.4	Atomic Structure/Atomic Weights	Quiz 1	2: 23, 25, 27, 31
Tues. 9/2	2.5 - 2.8	Periodic Table/Compounds/ Naming		2: 37, 43, 45, 49, 51, 55, 59, 65, 67, 69, 71
Thurs. 9/4	3.1 & 3.3	Equations/Formula Weights	Quiz 2	3: 11, 13, 21, 23, 25
Tues. 9/9		REVIEW		
Thurs. 9/11		<b>Exam 1: Chapters 1.2 – 3.3</b>		
Tues. 9/16	3.4 - 3.5	Moles/Empirical Formulas		3: 33, 35, 39, 43, 45, 47, 49
Thurs. 9/18	3.6	Stoichiometry	Quiz 3	3: 57, 59, 61, 63
Tues. 9/23	3.7	Limiting Reactants		3: 69, 71, 73, 75, 77
Thurs. 9/25	4.1- 4.3 (thru pg 133)	Solutions/Precipitation/Acids & Bases	Quiz 4	4: 15, 17, 19, 21, 23, 37, 39
Tues. 9/30	4.4 - 4.5	Redox/Concentrations		4: 49, 51, 61, 63, 69, 73, 75
Thurs. 10/2	4.6	Solution Stoichiometry	Quiz 5	4: 79, 81, 83, 87
Tues. 10/7	5.2 - 5.3	1 <sup>st</sup> Law/Enthalpy		5: 25, 37 (a only), 39
Thurs. 10/9	5.4 - 5.7	Enthalpies of Reactions /Calorimetry/Hess's Law/Formation	Quiz 6	5: 41, 43, 45, 51, 61, 63, 71
Tues. 10/14		REVIEW		
Thurs. 10/16		<b>Exam 2: Chapters 3.4 – 5.7</b>		
Tues. 10/21	6.5 - 6.9	Quantum Numbers/Orbitals/ Electron Configurations		6: 49, 51, 53, 63, 67 (a, b, c, d, f only), 69, 71 (a, b, d, e only), 73
Thurs. 10/23	7.3 - 7.5	<b>Atomic Radii/Ionization Energy</b>	Quiz 7	<b>7: 25, 27, 31, 45</b>
Tues. 10/27	8.1 - 8.3 & 8.5	Bonds/Lewis Structures		8: 11, 23, 33, 45, 49, 53
Thurs. 10/29	8.4 - 8.5	Polarity/Lewis Structures	Quiz 8	8: 37, 39
Tues. 11/4	9.1 - 9.3	Shapes/VSEPR/Polarity		9: 15, 21 (a, b, e, f only), 25, 31 (a only), 35 (a, b, d only)
Thurs. 11/6	9.4 - 9.6	Hybridization/Multiple Bonds	Quiz 9	9: 47, 51, 53, 55, 57
Tues. 11/11	10.1 - 10.4	Gases/Pressure/Gas Laws/ $PV = nRT$		10: 19, 21, 26, 33, 35, 39, 41
Thurs 11/13	10.5 - 10.6 (thru pg 411)	$PV = nRT$ Applications/Partial Pressure	Quiz 10	10: 45, 49, 53, 55, 61, 65
Tues. 11/18		REVIEW		
Thurs. 11/20		<b>Exam 3: Chapters 6.5 – 10.6</b>		
11/25&27		<b>Thanksgiving Break</b>		<b>No Class</b>
Tues. 12/2	11.1 - 11.3	Gases, Liquids, Solids/ Intermolecular Forces/Liquid Properties		11: 15, 19, 21, 23, 25
Thurs. 12/4	11.4 - 11.6	Phase Changes/Vapor Pressure/ Phase Diagrams	Quiz 11	11: 33, 39, 45, 51, 53
Tues. 12/9	13.4	Concentration Units		13: 35, 37, 39, 43, 45, 53
Thurs. 12/11		REVIEW		
12/15 – 12/19		<b>Final Exam (Cumulative)</b>		

Thursday 10/23 is National Mole Day, from 6:02 am to 6:02 pm!

**NUTRITION 251**  
**INTRODUCTORY PRINCIPLES OF NUTRITION**

R 4:30 – 5:45 PM, 127L

**INSTRUCTOR:** Ike Shibley  
**OFFICE:** 234 Luerssen  
**PHONE:** 610-396-6185, home 610-371-9229  
**EMAIL:** ias1@psu.edu  
**OFFICE HOURS:** MTW 10-11 AM

Welcome to Nutrition 251. This an introductory course so there are no prerequisites. I will refresh your memories concerning basic concepts from biology and chemistry that you need to understand nutrition. I will help you extend your learning by applying basic concepts to the understanding of the function and metabolism of essential nutrients. You will learn how to analyze nutrients in the foods you eat, what and how much of each nutrient is needed to stay healthy, and critically assess your eating habits so that you can set goals towards nutritionally sound practices. This course will also introduce major health issues in the U.S. that have a nutrition component and present risks, assessment, and policies. The course is designed to explore basic disease etiology, prevention and treatment.

**Required Texts**

Whitney and Rolfes, *Understanding Nutrition*, 12<sup>th</sup> Edition, West/Wadsworth, 2011  
–You can rent this book from the bookstore at ≈ 60% off

**Course Objectives:**

A successful student in Nutrition 251 will be able to:

1. List the functions of essential nutrients by integrating fundamentals of physiology and metabolism of these nutrients.
2. Thoroughly analyze a food label to determine all the nutrition information contained on the label.
3. Analyze the nutrient composition of foods and what quantities are needed for health.
4. Analyze the food pyramid provided by the USDA.
5. Explain fundamental principles of weight control as it relates to the physiology, metabolism, and behavioral psychology of energy balance and critically analyze diets with regard to nutritional quality.
6. Discuss etiology, risks, assessment, treatment, and health guidelines related to major health issues in the United States which have a nutrition component.
7. Apply fundamental nutrition knowledge in choosing a lifestyle that combines sensible eating with regular physical activity conducive to maintaining wellness.
8. Critically analyze nutrition practices, claims, and policies.

**Grading Policy**

Pre-class quizzes (10 @ 20 pts each—drop the lowest*)	200 pts
Exams (2 @ 150 pts each)	300 pts
Food Bank Analysis	50 pts
<i>In Defense of Food</i> letter	50 pts
Analysis of Diet Book	50 pts
<u>Final</u>	<u>150 pts</u>
<b>Total</b>	<b>800</b>
<b>pts</b>	

A (92-100%)	C+ (78-79%)
A- (90-91%)	C (70-77%)
B+ (88-89%)	D (60-69%)
B (82-87%)	F (less than 60%)
B- (80-81%)	

\*The next lowest quiz grade can be replaced by clicker points: you'll earn two points for every day you bring your clicker to class and answer ALL clicker questions.

**Blended Learning**

The definition of hybrid learning is using technology to enhance student understanding of the content. Rather than lecturing to you about what you should have already read in the textbook, class time will be spent assessing your comprehension of the content for that week. We only meet half the amount of time as a traditional three-credit course. The traditional time in the classroom will be substituted for more activities that you will complete on your own (outside of class). The goal is to help you learn the basics of nutrition while also stimulating you to think at higher levels so that you can critical analyze the constant bombardment of nutrition advice from friends, family, and the media. My goal is to help you evaluate nutritional advice, not to tell you what you should eat.

**Pre-class Quizzes**

Probably the biggest change from a traditional course is the obligation that you are under to do work outside of class. The textbook for this course is very good. So good in fact that I won't be covering much of the information already discussed in the book. You will be taking twenty point quizzes *prior* to class each week: you must complete the quiz by 8:00 AM each Thursday. The quizzes are open book but you will have to think about the questions in order to do well. You will obviously have to complete the reading prior to class also. When you complete the reading prior to class that means we can spend class time doing activities related to the information to strengthen your understanding of the material.

## **Clickers**

Another big change from a traditional course is how class time will be used. Instead of quietly sitting in class you will be expected to interact with your classmates and with the content. A number of questions will be projected on the screen and via 'clickers' you will input your answer. This is fun way to learn nutrition and will make class time go by much more quickly. But the most important reason we're using clickers is because students who think through questions—who engage with the content—are more likely to do better in the course.

## **Food Bank Analysis**

This is a big project that involves you writing down every single item you ingest for three days. Yikes! You'll need to carry a piece of paper around with you or a little notebook because the more accurate you are the more information you'll get from the project. Further information is available in the folders for weeks 3 and 5.

## ***In Defense of Food Letter***

You will be writing a letter to a friend or relative to explain how focusing on too much of the scientific aspect of nutrition can be harmful. Yes, I'm assigning book whose main message is to not take a nutrition course. In your letter you must use the advice Pollan gives and share it with your reader. More information is available in the week 8 folder. Be creative, this should be fun!

## **Analysis of a Diet Book**

You should have no trouble finding a popular diet book. I do not want a scientific book but instead one that a casual shopper at Barnes & Noble or Borders would buy. You need to read the book and then write a reaction to the book that includes a critical analysis of the main dietary claims in the book. We will talk about diets throughout the course so the earlier you read your book the more you'll get out of the course. More information is available in the week 12 folder.

## **Exams**

The exams in this course will be a combination of short answer, calculations, and essay exams. The short answer questions will test basic recall of nutritional information; the calculations will require you to apply nutritional knowledge to mathematical problems; and the essays will require that you apply your knowledge to novel situations as well as demonstrating that you can synthesize a body of information to make informed judgments about nutritional ideas.

## **Final Exam**

The final exam will be a cumulative test. Demonstrating your knowledge of nutrition for the entire course is a critical component of your learning so please try to minimize “binge and purge” learning.

## Are you prepared for this course?

Knowledge at the high school level of some basic principles of biology and chemistry will be necessary to discuss food absorption, metabolism, storage, excretion, and nutrient function. If these concepts are unfamiliar, briefly review Appendices A and B in the text. You might also benefit by reviewing the prefixes and suffixes listed on page 1 of the Glossary in your text (GL-1). This page will familiarize you with the language of nutrition, biology, and chemistry.

## Writing Center

The Writing Center is a free resource for members of the Penn State Berks community. At the Writing Center, a trained writing tutor will work with you at any point in the writing process from brainstorming ideas to polishing a final draft. Appointments are strongly recommended, but walk-ins will be accepted on a limited, first-come first-served basis. For more information or to make an appointment, call [\(610\) 396-6333](tel:610-396-6333) or [\(610\) 396-6029](tel:610-396-6029), email [bk-writingcenter@psu.edu](mailto:bk-writingcenter@psu.edu) or stop by Franco 167.

## Academic Integrity (49-20)

Academic integrity is the pursuit of scholarly activity free from fraud and deception. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used or concurrently used in another class without informing the instructor, or tampering with the academic work of other students. Work on the papers and assignments for this course should be done independently and should not be the result of discussions with others, unless specified by, or agreed upon with, the instructor. It is dishonest for students to sign in other students when roll is taken. The usual punishment for academic dishonesty is an "F" for the course or a lesser penalty if the alleged infraction is of a more minor nature.

## Disability Services

**Note to students with disabilities:** Penn State welcomes students with disabilities into the University's educational programs. If you have a disability related need for reasonable academic adjustments in this course or require academic support, please contact Yuriko Beaman, Disability Services Coordinator, at [ynb1@psu.edu](mailto:ynb1@psu.edu) or 610-396-6410. Her office is room 153 of the Franco building. For further information regarding The Office for Disability Services, please visit the web site at [www.equity.psu.edu/ods/](http://www.equity.psu.edu/ods/) *Instructors should be notified as early in the semester as possible regarding the need for reasonable academic adjustments.*

**NUTR 251  
Schedule**

<b>Class</b>	<b>Date</b>	<b>Topic</b>	<b>Reading</b>	<b>Assignment Due</b>
1	1/12	Overview Planning a Healthy Diet	1, 2	
2	1/19	Digestion, Absorption and Excretion	3	MyPyramid
3	1/26	Carbohydrates	4	Three Day Diet Log
4	2/2	Lipids	5	Diet Analysis
5	2/9	Protein	6	Book Title
6	2/16	Metabolism	7	
7	2/23	<b>Exam 1 Chapters 1-7</b>		
8	3/1	Energy Balance Weight Management	8, 9	<i>In Defense of Food</i> Letter
9	3/15	Vitamins	10, 11	
10	3/22	Minerals	12, 13	
11	3/29	Fitness	14	Book Analysis
12	4/5	<b>Exam 2 Chapters 8-14</b>		
13	4/12	Pregnancy and Lactation	15 & Highlight	
14	4/19	Diet and Health	18	
15	4/26	Make-up day		

## Resources

- Amaral, K.E., Shank, J.D., Shibley, L.R., and Shibley, I.A. (2011) Designing a Blended Course: Using ADDIE to Guide Instructional Design. *Journal of College Science Teaching* 40 (6): 80-85.
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- Bruff, D. (2009) *Teaching with Classroom Response Systems*. Jossey-Bass.
- Carr, N. (2010) *The Shallows: What the Internet is Doing to Our Brains*. W.W. & Norton, Co.
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