

<p>C103: Introduction to Chemical Principles Syllabus Fall 2009</p>
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Lecture

Instructor	Kimberly Arnold
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Office Hours	Tuesday 1-2 PM & Friday 9-10 AM held in room C046 or by appointment

Laboratory

Instructor	Jill Robinson
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Office Hours	Monday 10-11 AM & Thursday 10-11 AM or by appointment

**Class Time:** 8:00-8:50 AM in WH100

You must also be registered for a laboratory and 2 discussion sections.

**Course Materials:**

1. **Required:** Chemistry, The Molecular Science, 3<sup>rd</sup> edition, Moore, Stanitski and Jurs, Brooks Cole, 2008
2. **Recommended:** Student Solutions Manual to Chemistry, The Molecular Science, 3<sup>rd</sup> edition, Moore, Stanitski and Jurs, Brooks Cole, 2008.
3. **Recommended:** Study Guide for Chemistry, The Molecular Science, 3<sup>rd</sup> edition, Moore, Stanitski and Jurs, Brooks Cole, 2008.
4. **Required:** Chemistry C103/121, Chemistry Laboratory Manual 6<sup>th</sup> edition, Hayden-McNeil. ISBN: 9780738019758
5. **Required:** Safety Goggles
6. **Required:** Scientific calculator
7. **Required:** Student Clicker (eInstruction Version)

eInstruction enrollment code or coupon code from Bookstore. Other (and cheaper) option is to pay with credit card when you register your clicker with eInstruction online. You only need one code per semester regardless of how many classes you register your clicker with during the semester.

\*Note: You will use the same textbook and clickers in C117.

## Course Overview

This course was designed to prepare students for the general chemistry sequence. The Department of Chemistry created the course to help students review and/or enhance their basic skills in chemistry and algebra. Content includes basic chemical information such as applications of measurement, periodic trends of the elements, the modern view of the atom, balancing chemical equations, stoichiometry, the factor-label method (dimensional analysis), and the logic behind naming chemical compounds. The course emphasizes the application of these basic concepts by introducing the material within the context of the story of how and why it was developed. The lectures and discussion sections will focus on problem-solving strategies, applications of basic chemical principles, and providing practical practice solving problems. In the laboratory portion of C103, students will practice basic laboratory techniques and will be given the opportunity for hands-on exploration of basic chemical principles.

## Course Website

The class website is <http://www.chem.indiana.edu/academics/ugrad/Courses/c103/default.asp>. You will find useful information about the class on this website such as lecture notes, homework, answer keys, and grades (found on CALM). Check this website often!

**Students can find policies regarding drop/adds, incompletes, drop dates, and student etiquette at the Policies for Students link on the course homepage.**

## Academic Integrity

You are expected to observe high standards of intellectual integrity and honesty. Plagiarism and cheating will be taken seriously in this class by the professor and by the AIs. Academic dishonesty includes cheating on exams or quizzes, presenting, as your own, work that is *not* in fact your own, whether you take it from another student, from a library book, from the Web or wherever. It also includes allowing your *own* work to be misrepresented in this way as some other student's work. Cleverly rewording someone else's work, in order to disguise what you are doing, does not make any difference; it's still academic dishonesty if the thoughts behind it are not your own. Please be aware that laboratory reports are to be an individual effort and that students collaborating on the write up of the experiments are considered guilty of cheating. When in doubt, *always* cite your sources!

You are advised to read the *Code of Student Rights, Responsibilities and Conduct* especially Part III: "Student Misconduct" and Part IV: "Student Disciplinary Procedures." It is also available on-line at <http://dsa.indiana.edu/Code/index1.html>. The standard penalty for cheating and/or plagiarism in is a grade of F in the entire course. All cases of academic misconduct will be immediately reported to the Dean of Students as well as the Dean or Director of the student's school.

## Policy regarding e-mails

Remember that emails are professional correspondences.

1. Properly address the email recipient. Most of the instructors that you encounter in college should be addressed as "Professor" or "Dr.," not by their first name, "Ms.," "Mrs.," or "Mr.," unless they instruct you otherwise. It is typically appropriate to address AIs by their first names.

2. Email provides a permanent document of a communication between two people. Therefore, be sure that your emails are polite, professional, and well prepared before you send them. You should not feel comfortable saying anything in email that you would not say verbally to the recipient. Be succinct in your email messages.
3. Always use complete words and sentences. Remember that an email is a professional correspondence, not a communication with a friend such as an IM or a text message.
4. Check course policies before sending an email to determine the appropriateness of your topic. Many of your questions can be answered by reading the course syllabus.

## **Course Format**

### **Lecture:**

Your attendance at lecture is vital to your success in the course. During lecture we will discuss principles, practice problems and present demonstrations. You should read the textbook assignments prior to lecture and take clear notes during lectures. **Lecture CALM** problems will be available for you to use as additional practice problems. These are not required but strongly recommended.

During lectures you will be given the opportunity to answer clicker questions that come up as we discuss and learn new material. These questions graded for correctness and you will receive points at the end of the semester for answering at least 75% of the questions correctly. Instructions for registering your clicker will be handed out in class and available on the class website. It is the student's responsibility to correctly register their clicker.

### **Discussions:**

Discussion sections in C103 play a central role in helping students master the material. Learning and understanding chemistry takes a lot of practice which is why it is important that you attend both of the scheduled discussion sections each week. During discussion, you will work with the AI and your fellow classmates to practice problems and go over worksheet questions. Weekly homework will be distributed and collected during this time. These sessions are **mandatory**. To accommodate emergency absences, you may miss two discussion sessions without penalty. No late worksheets will be accepted. During one discussion each week, you will be given a mock quiz. These will help you stay up-to-date with the class material and help you prepare for exams.

### **Examinations:**

There will be **three Tuesday evening examinations**, each worth 125 points, scheduled from 7:15–9:15 p.m. on September 22, October 27, and December 1. Each examination will be designed to test your knowledge and understanding of the material covered in the lecture prior to that examination. For students with unavoidable time conflicts due to class schedule, there will be an early examination time (5:15–7:15 p.m.) available for each of the three Tuesday evening examinations. A **final examination**, worth 150 points, will be given on Tuesday, December 15 from 10:15 am – 12:15 p.m. This examination will be comprehensive (covering all aspects of the semester's work).

Prior to the above examinations, announcements will be posted to indicate the rooms where the examinations will be given. **No make-up examinations will be given. If you miss an examination, your score will be zero.**

### **Laboratory:**

In the laboratory you will have the opportunity to experience directly some of the relationships discussed in the lecture and textbook. You will also practice basic laboratory techniques and will be given the opportunity for hands-on exploration of basic chemical principles. The laboratory is extremely important in gaining an understanding and appreciation of chemistry.

### **CALM:**

Calm pre-lab questions are accessible at <http://calm.indiana.edu/calm>. Click on the link for C103 Lab. Credit will be given for correctly answered questions. All CALM questions are open at the start of the semester. However, in order to get credit for the CALM pre-lab, you must answer the questions **before 8 AM on Monday during the week of the lab.**

### **Laboratory Reports:**

Laboratory reports will be due at the beginning of the next laboratory after the experiment is performed. If you are absent for a laboratory, you must e-mail your AI **prior** to your absence and make arrangements to turn in your due lab report. A 20% point deduction will be taken for each day a lab report is turned in late. Most lab reports consist of two parts, the tear-out report from your lab manual and a typed summary. Details on writing the lab summary will be provided on a separate handout. Summaries will be submitted online through [www.turnitin.com](http://www.turnitin.com).

### **Absence Policy:**

**An unexcused absence is an automatic zero for the exam, mock quiz or assignment missed.**

An excused absence may be granted by the instructor. If you anticipate that you will have an excused absence on the day an exam is scheduled (university function or religious holiday, etc.) you are required to make arrangements 1 week in advance of the exam or assignment date.

If you have three or more absences from lab (either from not attending lab **or** not turning in a lab report), you will be assigned a grade of F for the entire course regardless of the point total that you obtain in the course.

**There are no make-up exams, worksheets, or laboratories for any reason. You will not be able to switch lab sections in order to make up labs.**

### **SOURCES OF HELP**

- Professor's office hours (listed on the first page of syllabus)
- Associate Instructor's office hours are in the General Chemistry Resource Center, C046. Any C103 AI should be able to help you, even if they are not your own specific AI. The AI office hours will be announced in class and posted on the course website.
- Group study among your fellow students is often very helpful. Try to get to know your fellow students since you will be spending lots of time with them during this fast-paced summer session. Feel free to use the tables in C046 for an area to study. There are computers with printers available for chemistry students to use in C046 and C006.
- There are several nights of free general chemistry tutoring available in C046. Please see the Undergraduate Office (C021) or the chemistry undergraduate website: <http://chem.indiana.edu/ugrad/resources.asp> for specific details.

## Grades

### Lecture

Exams (3 Exams @ 125 points each) (Final Exam @ 150 points)	525
Lecture Clicker Points	50
Discussion Worksheet 12 @ 5 pts each, drop 2 lowest	50
Discussion Mock Quiz 12 @ 5 pts each, drop 2 lowest	50

### Laboratory

Lab Skills and Safety assignment	15
Lab Reports 9 @ 30 pts. each, drop lowest	240
CALM Prelab 11 @ 5 pts. each, drop lowest	50
Laboratory Midterm Exam	25
Laboratory Final Exam	25

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Total	1030 Points
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## Final Course Grade

Grades will be determined at the end of the semester based on both your lecture and laboratory performance.

A tentative grading scale is shown below. We reserve the right to adjust the grade requirements to slightly lower numbers depending on class averages. Plus and minus grades will be determined at the end of the semester. Please note that a 90% represents the lowest of the A range (therefore the lowest A-)

A	>90%
B	>80%
C	>70%
D	>60%
F	<60%

**Important Note:** A grade of B- or better in C103 **or** a passing grade on the chemistry placement exam is required for enrollment in C117.

## Policy on Regrading

Any request to have any material (lab, exam, quiz, etc) regraded must be made to your AI within 1 week of the date the item was turned back to you and/or posted on CALM. There will be no exceptions to this rule, so be sure to check your grades on CALM regularly to verify they are correct.

**Tentative Lecture Outline**

<b>Date</b>	<b>Lecture Topic</b>	<b>Reading</b>	<b>Laboratory</b>
M 8/31 W 9/2 F 9/4	Course Introduction/The Nature of Chemistry Atoms and Elements and Atomic Structure <b>Lab Lecture: Safety and Laboratory Skills</b>	1.1-1.7 1.8-12, 2.1-2.2	No labs this week!
M 9/7 W 9/9 F 9/11	Significant Figures, Units & Atomic Weight The Mole, Molar Mass & the Periodic Table <b>Lab Lecture: Density of Pennies</b>	2.3-2.6 2.7-2.9	Safety and Laboratory Skills Assignment
M 9/14 W 9/16 F 9/18	Molecular Compounds & Formulas Molecular Compounds & Formulas <b>Lab Lecture: Forensic Chemistry</b>	3.1-3.7 3.8-3.10	Density of Pennies
M 9/21 T 9/22 W 9/23 F 9/25	Molecular Compounds & Formulas <b>Exam 1 from 7:15 – 9:15 PM</b> Balancing Chemical Equations <b>Lab Lecture: Spectroscopy of Food Dyes</b>	3.11 4.1-4.3	Forensic Chemistry (handout)
M 9/28 W 9/30 F 10/2	The Mole in Chemical Reactions Limiting Reactants <b>Lab Lecture: Alka Seltzer</b>	4.4 4.5	Spectroscopy of Food Dyes
M 10/5 W 10/7 F 10/9	Limiting Reactants & Percent Yield Empirical Formulas <b>Lab Lecture: Synthesis of Aspirin</b>	4.6 4.7	What is the % by mass of NaHCO <sub>3</sub> in Alka Seltzer?
M 10/12 W 10/14 F 10/16	Precipitation Reaction Acids Bases Reactions <b>Laboratory Midterm Exam (in class)</b>	5.1 5.2	Synthesis of Aspirin-week 1
M 10/19 W 10/21 F 10/23	Solution Concentration Acids and Bases and the pH Scale <b>Lab Lecture: High Performance Liquid Chromatography (HPLC)</b>	5.6-5.8 16.1,3,4	Synthesis of Aspirin-week 2
M 10/26 T 10/27 W 10/28 F 10/30	Molecular Structure and Acid Base Properties <b>Exam 2 from 7:15 – 9:15 PM</b> Redox Reactions <b>Lab Lecture: Synthesis of Biodiesel</b>	16.6 5.3	High Performance Liquid Chromatography (HPLC) of Aspirin
M 11/2 W 11/4 F 11/6	Oxidation Numbers Electromagnetic Radiation & the Bohr Model <b>Lab Lecture: What's in the water? Week 1</b>	5.4 7.1-7.3	Synthesis of Biodiesel
M 11/9 W 11/11 F 11/13	Electronic Configurations Periodic Trends and the Periodic Table <b>Lab Lecture: What's in the water? Week 2</b>	7.6-7.7 7.8-7.11, 8.7 10.3-10.5	What's in the water? Week 1
M 11/16 W 11/18 F 11/20	Periodic Trends and the Periodic Table Gases in the Atmosphere and KMT <b>Lab Lecture: Acetic Acid in Vinegar</b>	7.8-7.11, 8.7 10.1-10.3	What's in the water? Week 2
M 11/23 W 11/25 F 11/27	Ideal Gas Law & Gases in Reactions NO CLASS: Thanksgiving break NO CLASS: Thanksgiving break	10.4-10.6	No labs this week!
M 11/30 T 12/1 W 12/2 F 12/4	Ideal Gas Law & Gases in Reactions <b>Exam 3 from 7:15 – 9:15 PM</b> Gas Density, Gas Mixtures & Partial Pressures <b>Laboratory Final Exam (in class)</b>	10.4-10.6 10.7-10.9	Acetic Acid in Vinegar
M 12/7 W 12/9 F 12/11	Pollution and Global Warming Review for final exam Review for final exam	10.11-10.13	No labs this week!
T 12/15	<b>Final Exam from 10:15 AM - 12:15 PM</b>		