



Instructor: Dr. Polina Pine

Lectures: MWF 11:30-12:20am Cuneo 109

Phone 83134

You must also be registered in one of the following discussion sections:

Email: ppine@luc.edu

Office Location: FH-403

Discussions: 006 – Mo 12:35-1:25pm FH-105

Office Hours: TBA

007 – Mo 1:40-2:30 pm FH-105

Course Overview

Prerequisite knowledge from Chemistry 101 is necessary for in-depth study of topics in Chemistry 102. We will focus on applying a conceptual understanding of fundamental chemical principles. Students will continue to learn the language of chemistry and develop their skills in scientific problem solving and critical thinking. This will serve as a foundation for further study in chemistry, other sciences and related disciplines. The material is highly cumulative over two semesters, such that you will be able to do the following:

- Use multiple perspectives of matter (macroscopic, particle, symbolic levels) to qualitatively describe and explain characteristics, properties, and relationships of the following: liquids and solids, solutions, reaction kinetics, equilibria, acids and bases, reaction thermodynamics, electrochemical reactions, nuclear reactions.
- Quantify relationships between variables controlling chemical systems.
- Solve quantitative multistep problems combining multiple concepts within the systems.
- Differentiate among closely related factors, categorize problem types, and select appropriate tools to solve these problems.
- Apply chemical principles to explain natural phenomena.

The three most important objectives for this class are

- 1) Gaining factual knowledge (terminology, classifications, methods, trends)
- 2) Learning fundamental principles, generalizations, or theories
- 3) Learning to apply course material (to improve thinking, problem solving, and decisions)

Prerequisites

Chemistry 101 or 105 and completion of Math 118 with a grade of C- or better.

Required Text

- Chemistry The Central Science, Brown/LeMay/Bursten/Murphy/Woodward, 13th edition
- MasteringChemistry online access code for the above text (Required)

Course Materials

- MasteringChemistry course ID: **PINECHEM102005SPR2016**
- Scientific Calculator
- Color pens
- HB2 pencils
- Positive attitude

Grading policy

Mastering Chemistry	15%
Discussions	EC (added to the following unit exam)
Exams	85%

The lectures are supplemented by the Discussion session; each Discussion Handout (DH) is worth 1 point. Getting the extra-credit for the Discussion Handout is **based on following the format of both the Discussion Handout and Class Participation. You must attend and participate in the Discussion to get 1 point for the DH. If you do not attend or do not submit the DH no points will be granted.** During the Discussions that do not require the submission of the DH no extra points are given, but the material discussed in the session is essential for the course and the exams. These points for the DH are added to the score of the following unit-exam. There will be three unit exams and one final exam. No early exams, no make-ups! Exams will consist of multiple-choice and long-answer questions. Exams comprise 85% of your total course score, and will be automatically calculated as the higher score between these two options:

Option 1: $\text{Total_Exam} = 0.2 * (\text{Exam1} + \text{Exam2} + \text{Exam3}) + 0.4 * \text{Final_Exam}$

Option 2: $\text{Total_Exam} = 0.2 * (\text{Two_Best_Unit_Exams}) + 0.6 * \text{Final_Exam}$

Every unit exams: 50 minutes, the dates are given in the tentative schedule. If you miss one unit exam for any reason, Option 2 will automatically be used to determine your grade. A second missed unit exam will result in a score of zero for the missed exam. Final exam has to be taken!

Final exam: two hours - MANDATORY. The final exam must be taken on the date scheduled or a grade of F will automatically result. Final exam is comprehensive. The exact day and place will be announced. No make-ups, no early dates for the exams.

The approximate grading scale is the following: 88.0% is the lowest A-; 75.0% is the lowest B-; 60.0% is the lowest C-; 50.0% is the lowest D, <50.0% is F.

Graded exams will be returned as soon as possible. Issues with graded exams must be submitted within 7 days of being returned, otherwise scores will be considered final.

Final exam is Monday, May 2nd 2016 1:00-3:00 pm (for exact day and time check here:

http://www.luc.edu/academics/schedules/spring/exam_schedule.shtml)

Instructor Privileges

Instructor reserves the right to make changes and adjustments to this syllabus as necessary, including, but not limited to, the grading policy and course schedule.

Homework Policy

The Home Work will be given online in the form of Mastering Chemistry at <http://www.MasteringChemistry.com> and will be graded. It is students' responsibility to follow the deadline for the submission. Tentative schedule will be given in the beginning of the semester. Late submission will result "zero" for this assignment. The suggested End-of-Chapter problems are given but NOT graded. A list of Highly Recommended Textbook problems will be posted under RESOURCES on Sakai

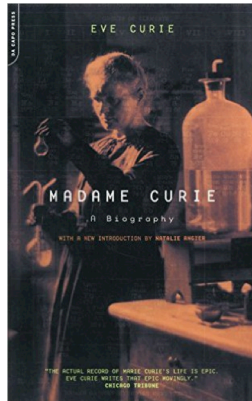
The Exams procedure

Phones, tablets and any electronic devices are not permitted. You will get the Periodic Table, exam and answers form (if the exam is multiple choice questions). Come to the exam with **three** items: working **HB-2 pencil(s)**, working approved **calculator** (extra batteries are recommended), and your **Loyola ID** visible on your desk to be checked during the exam. If you are unsure whether your calculator is ACT-exam-approved, check the list at: <http://www.actstudent.org/faq/calculator.html>. **All purses, bags, jackets, etc must be left at front of the room. Once the exam is distributed, if you exit the room for any reason before time is up, your exam is complete and will be collected.**

Optional Text (recommended but not required):

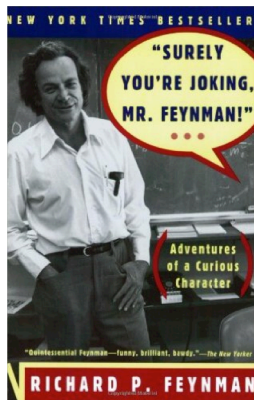
Madame Curie: A Biography

Author: Eve Curie



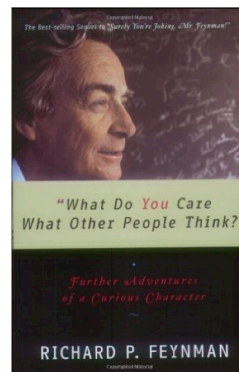
Surely You're Joking, Mr. Feynman! (Adventures of a Curious Character)

Author: Richard P. Feynman



"What Do You Care What Other People Think?": Further Adventures of a Curious Character

Author: Richard P. Feynman



Tentative Lecture Schedule

Our actual pace and the topics may vary from this schedule:

Week	Dates	Monday	Wednesday	Friday
1	Jan 18,20,22		Intro, Solution Process (13)	Solubility, Solution Concentration (13)
2	Jan 25,27,29	Concentration, Colligative Properties (13)	Colligative Properties, Reaction Rates (13,14)	Reaction Rates, Rate Laws (14)
3	Feb 01, 03, 05	Rate Laws (14)	Half-Life, Collision Model (14)	Arrhenius, Activation Energy (14)
4	Feb 08,10,12	Reaction Mechanisms (14)	EXAM 1 (February 10 th)	Dynamic Equilibrium, Equilibrium Constant (15)
5	Feb 15,17,19	Equilibrium Constants and Concentrations (15)	Reaction Quotient (15)	LeChatlier's Principle (15)
6	Feb 22,24,26	Bronsted-Lowry Acids and Bases (15)	Relative Acidity/Basicity, pH Scale (16)	pH Scale, Strong Acid/Base Calculations (16)
7	29 th Feb, March 2,4	Weak Acid/Base Equilibria (16)	Weak Acids/Bases, Salt Solutions (16)	EXAM 2 (March 4 th)
8	March 7, 9,11	SPRING BREAK		
9	March 14, 16,18	Common Ion Effect (17)	Buffer solutions and their preparation (17)	Buffer solutions and their preparation (17)
10	March 21,23,25	Acid-Base Titrations (17)	Acid-Base Titrations (17)	Easter
11	March 28,30,Ap r 1st	Easter Last day to withdraw with the grade W	Solubility Equilibria (17)	Thermodynamics (19)
12	Apr 4,6,8	Spontaneous Processes, Entropy (19)	Entropy, Gibbs Free Energy (19)	Gibbs Free Energy & Equilibrium (19)
13	Apr 11,13,15	Balancing Redox Reactions (20)	EXAM 3 (April 13 th)	Electrochemical cells (20)
14	Apr 18,20,22	Free Energy, Equilibrium, Nernst (20)	Batteries, Fuel Cells, Electrolysis (20)	Radioactivity, Nuclear Chemistry (21)
15	Apr 25,27,29	Nuclear Chemistry (21)	Nuclear Chemistry (21)	Additional topics

Academic Integrity

Trust and integrity are important qualities in students. All submitted work must represent your own work and your own work only. Academic dishonesty of any kind, such as plagiarism and cheat sheets on exams, will not be tolerated. Any student caught cheating on an assignment in any way will receive a “zero” for that assignment and be reported to Chairperson of the Chemistry Department and the Dean School of Art and Science. For further information regarding the Academic Integrity policy and disciplinary procedures, refer to the Undergraduate Studies Catalog: http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml.

Disability Accommodations

At times, students with disabilities may wish to avail themselves of the University’s ancillary services. Students requiring accommodations at the University need to contact the Coordinator of Services for Students with Disabilities, then provide documents and schedule arrangements with the instructor at the beginning of the term. Information is available at: <http://www.luc.edu/sswd/>

Tutoring Center

The CTAE offers several different programs each semester, including class-specific tutor-led small groups, Academic Coaching groups dedicated to general academic support, and a Study Buddy Directory for students seeking out more independent collaboration with other students in the same class or subject area. For more information refer to http://www.luc.edu/tutoring/Small_Group_Info.shtml

Harassment (Bias Reporting)

It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias. In order to uphold our mission of being Chicago's Jesuit Catholic University-- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link: <http://webapps.luc.edu/biasreporting>

A link to the official Loyola calendar can be found here: <http://luc.edu/academics/schedules/index.shtml>