



**Instructor:** Dr. Polina Pine

**Phone** 83134

**Email:** ppine@luc.edu

**Office Location:** FH-403

**Office Hours:** M/W 12:30-1:30pm

Tu 11:00am-12:00

**During the weeks when the labs are not held**

**Tu Office Hours are canceled and substituted  
with Fri 12:30-1:30pm**

**Lectures:**

**Section 001** MWF 9:20-10:10am Flanner Hall-Auditorium

**Section 002** MWF 11:30-12:20am Cuneo 218

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

003 – M 12:35-1:25pm

004 – M 1:40-2:30 pm

005 – W 12:35-1:25pm

006 – W 1:40-2:30 pm

and one of the LAB sections: 007 - M 2:45-4:3 pm

008 - Tu 9:30am-11:15am

009 - W 2:45-4:30pm

010 - Tu 12:00-1:45pm

011 - Tu 2:00-3:45pm

**Course Overview**

The fundamentals of general, organic chemistry and biochemistry are discussed in the course. For success in this course, it is important that you work on problems every day and that you do not fall behind. Chemistry moves fast, and it is imperative that you keep up. It is strongly recommended that you do the practice problems in the textbook every day and ask questions of the instructor and teaching assistants.

The Home Work in a form of Mastering Chemistry will be given on each studied chapter in the book and will be graded (refer the Tentative Schedule for the chapter list). It is very important that you use the Mastering Chemistry resource every day. The successful completion of the course and a good grade can be successfully achieved by completing **all** the requirements of the course:

1. Reading the textbook
2. Attending the lectures
3. Attending the discussion session
4. Completing the Mastering Chemistry Assignments
5. Completing Lab Assignments
6. Following the safety rules

## Required Text

- *General, Organic and Biological Chemistry.*

**Author:** Frost and Deal

**ISBN:**9781323246696

**Publisher:** Pearson Learning Solutions

- *Mastering Chemistry online access code for the above text (Required):*

**PINECHEM151F2015**

<http://www.pearsonmylabandmastering.com/northamerica/masteringchemistry/>

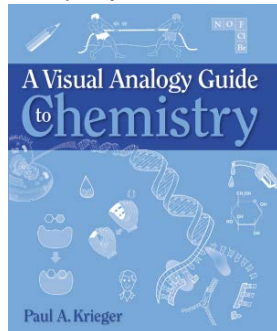
## Optional Text (recommended but not required):

### *Visual Analogy Guide to Chemistry*

**Author:**Krieger

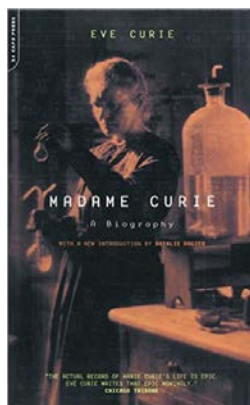
**ISBN:**9780895828354

**Publisher:** Morton Publishing  
Company



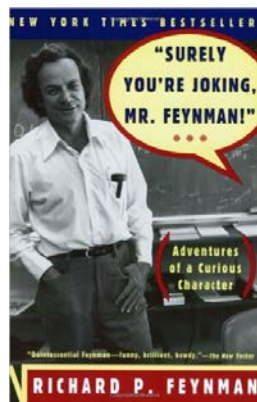
### *Madame Curie: A Biography*

**Author:** Eve Curie



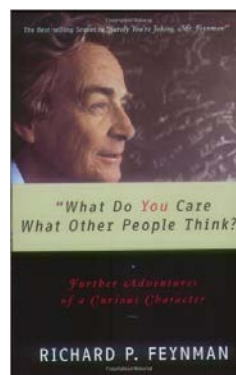
### *Surely You're Joking, Mr. Feynman! (Adventures of a Curious Character)*

**Author:** Richard P. Feynman



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

**Author:** Richard P. Feynman



## Course Materials

All announcements, PowerPoint slides and handouts will be posted on Sakai. Students are responsible to print all related material from Sakai, check announcements and follow all instructions provided and posted by the instructor.

MasteringChemistry online access code for the above text: **PINECHEM151F2015**

- Scientific Calculator
- Color pens
- HB2 pencils
- Lab Coat
- Periodic Table

## Grading policy

Mastering Chemistry	10%
Labs	20%
Exams ( <b>higher score</b> between two options, see below)	70%
Discussions*	EC (added to the following unit exam)

\*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 the Discussion Handout and class attendance and participation. **You must attend and participate** in the Discussion to get 1 point for the DH. The extra-points for the DH are added to the score of the following unit-exam. Students **must attend the discussion section and personally turn in their own discussion handout. No early and no late handouts will be accepted; students must follow the directions on the handouts.** Students are allowed and encouraged to work together on discussion handouts.

There will be three unit exams and one final exam. Each unit exam contributes 20% and the final exam contributes 40% toward the total exam score. **No early exams, no make-ups!** Exams scores comprise 70% of your total course score, and will be automatically calculated as the **higher score** between these two options:

Option 1 (all three unit exams and final exam are calculated):

$$\text{Total\_Exam} = 0.2 * (\text{Exam1} + \text{Exam2} + \text{Exam3}) + 0.4 * \text{Final\_Exam}$$

Option 2 (one low scored unit exam is disregarded):

$$\text{Total\_Exam} = 0.2 * (\text{Two\_Best\_Unit\_Exams}) + 0.6 * \text{Final\_Exam}$$

Every unit exams: 50 minutes, the dates are given in the tentative schedule (Fri Sept 18<sup>th</sup>, Mon Oct 19<sup>th</sup> and Fri Nov 13<sup>th</sup>).

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.

**The final exam must be taken on the date scheduled or a grade of F will automatically result.**

Final exam is comprehensive. Final exam: two hours - **MANDATORY**.

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Section 001 **MWF** 9:20-10:10am      Final Exam is scheduled for **Sat. Dec 12<sup>th</sup> 1:00-3:00**

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Section 002 **MWF** 11:30-12:20am      Final Exam is scheduled for **Mon. Dec 7<sup>th</sup> 1:00-3:00**

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**For the exact dates and times follow the link:**

[http://www.luc.edu/academics/schedules/spring/exam\\_schedule.shtml](http://www.luc.edu/academics/schedules/spring/exam_schedule.shtml)

All points are converted to percentages; the total grade is calculated as following:

$$\begin{aligned} \text{Total grade (out of 100\%)} &= (\text{exams grade in \% best of opt1 and opt2}) * 0.7 \\ &+ (\text{average mastering chemistry grade in \%}) * 0.1 \\ &+ (\text{average lab grade in \%}) * 0.2 \end{aligned}$$

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.

### **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.

### **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 exercises are odd-numbered problems given but NOT graded.

## Tentative Lecture Schedule

**Our actual pace and the topics may vary from this schedule.** However, you must read the scheduled chapter before each class.

Week	Dates/Labs	Monday	Wednesday	Friday
1	August 24, 26, 28 <b>No lab</b>	Course Introduction, 1.1 Classifying Matter: Mixture or Pure Substance 1.2 Elements, Compounds, and the Periodic Table 1.3 Math Counts	1.3 Math Counts 1.4 Matter: The “Stuff” of Chemistry 1.5 Measuring Matter	1.5 Measuring Matter 1.6 How Matter Changes
2	Aug 31, Sep 2, 4 <b>Lab1-Safety</b>	2.1 Atoms and Their Components 2.2 Atomic Number and Mass Number 2.3 Isotopes and Atomic Mass 2.4 Radioactivity and Radioisotopes	2.4 Radioactivity and Radioisotopes 2.5 Nuclear Equations and Radioactive Decay 2.6 Radiation Units and Half-Lives 2.7 Medical Applications for Radioisotopes	2.7 Medical Applications for Radioisotopes 3.1 Electron Arrangements and the Octet Rule Electron configuration (Appendix 2.6-2.8) 3.2 In Search of an Octet, Part 1: Ion Formation 3.3 Ionic Compounds–Electron Give and Take
3	Sep 7,9,11 <b>No lab</b> <b>Labor day</b>	<b>Labor day</b> <b>NO CLASSES</b>	3.3 Ionic Compounds–Electron Give and Take 3.4 In Search of an Octet, Part 2: Covalent Bonding (Lewis structure)	3.4 In Search of an Octet, Part 2: Covalent Bonding (Lewis structure) 3.5 The Mole: Counting Atoms and Compounds
4	Sep 14, 16, 18 <b>Lab2</b> <b>Measurements</b>	3.6 Getting Covalent Compounds into Shape 3.7 Electronegativity and Molecular Polarity	4.1 Alkanes: The Simplest Organic Compounds 4.2 Representing the Structures of Organic Compounds 4.3 Families of Organic Compounds–Functional Groups	<b>EXAM 1 (Sep 18<sup>th</sup>)</b>

5	Sep 21, 23, 25 <b>Lab 3</b> physical/chemical changes	4.3 Families of Organic Compounds–Functional Groups 4.4 Nomenclature of Simple Alkanes	4.4 Nomenclature of Simple Alkanes 4.5 Isomerism in Organic Compounds	4.5 Isomerism in Organic Compounds 5.1 Thermodynamics 5.2 Chemical Reactions: Kinetics
6	Sep 28, 30, Oct 2 <b>Lab4- isomerism and the shape of the molecules</b>	5.2 Chemical Reactions: Kinetics 5.3 Overview of Chemical Reactions	5.3 Overview of Chemical Reactions 5.4 Oxidation and Reduction	5.4 Oxidation and Reduction 5.5 Organic Reactions: Condensation and Hydrolysis
7	Oct 5, 7, 9 <b>No Lab</b> fall break	Fall BREAK	5.6 Organic Addition Reactions to Alkenes	6.1 Classes of Carbohydrates 6.2 Functional Groups in Monosaccharides 6.3 Stereochemistry in Monosaccharides
8	Oct 12, 14, 16 <b>Lab 5</b> Reaction/Vitamins	6.3 Stereochemistry in Monosaccharides 6.4 Reactions of Monosaccharides	6.4 Reactions of Monosaccharides 6.5 Disaccharides	6.6 Polysaccharides 6.7 Carbohydrates and Blood
9	Oct 19, 21, 23 <b>Lab 6</b> Sugars	EXAM 2 (Oct 19 <sup>th</sup> )	7.1 Types of Attractive Forces 7.2 Liquids and Solids: Attractive Forces are Everywhere	7.3 Attractive Forces and Solubility 7.4 Gases: Attractive Forces are Limited
10	Oct 26, 28, 30 <b>Lab 7</b> Extraction of plant pigments	7.4 Gases: Attractive Forces are Limited 7.5 Dietary Lipids and Trans Fats 7.6 Attractive Forces and the Cell Membrane	8.1 Solutions are Mixtures 8.2 Formation of Solutions 8.3 Chemical Equations for Solution Formation	8.3 Chemical Equations for Solution Formation 8.4 Concentrations
11	Nov 2, 4, 6 <b>Lab 8</b> Fats and Lipids	8.5 Dilution 8.6 Osmosis and Diffusion 8.7 Transport Across Cell Membranes	9.1 Acids and Bases- Definitions 9.2 Strong Acids and Bases 9.3 Chemical Equilibrium	9.3 Chemical Equilibrium 9.4 Weak Acids and Bases 9.5 pH and the pH Scale
12	Nov 9, 11, 13 <b>Lab 9</b> Dialysis	9.5 pH and the pH Scale 9.6 pKa 9.8 Buffers and Blood: The Bicarbonate Buffer System	9.7 Amino Acids: Common Biological Weak Acids 10.1 Amino Acids-A Second Look	Exam 3

13	Nov 16, 18, 20 <b>Lab 10 Acids/Bases.</b>	10.1 Amino Acids-A Second Look 10.2 Protein Formation	10.3 The Three- Dimensional Structure of Proteins 10.4 Denaturation of Proteins	10.5 Protein Functions 10.6 Enzymes—Life's Catalysts 10.7 Factors That Affect Enzyme Activity
14	Nov. 23, 25, 27 <b>No Lab</b>	10.7 Factors That Affect Enzyme Activity	<b>Thanksgiving NO CLASSES</b>	
15	Nov 30, Dec 2,4 <b>No Lab</b>	12.1 How Metabolism Works 12.2 Metabolically Relevant Nucleotides	12.5 The Citric Acid Cycle—Central Processing	12.5 The Citric Acid Cycle—Central Processing

### CHEM 151 Laboratory

Please note: NO MAKE-UP LABS will be given.

**SAFTY NOTE: ABSOLUTLY NO DRINKS (INCLUDING WATER) AND FOOD (INCLUDING GUM) IN THE LAB!!!**

**POINTS WILL BE REDUCED FOR NOT FOLLOWING THE SAFTY RULES**

There is a lab portion of this course for the lab experiments please refer tentative schedule given in the table above. There will be a total of ten experiments. The procedure for each experiment and the outline of the Pre-Lab will be passed out during the previous lab period. Each lab meeting will start with submission by students of the completed Pre-lab on the experiment to be performed that day. The Pre-lab is 30% of the experiment score. The lab report, due immediately after completion of the experiment will be worth 70%.

**There will be a Safety and Equipment Quiz (10 questions) on your first day of lab followed by equipment check-in. Please read carefully the safety protocol and equipment list, posted on Sakai.**

**To prepare for the quiz and first lab experiment watch the following video:**

<https://www.youtube.com/watch?v=VRWRmIEHr3A>

### **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](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](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>