

Eastern Illinois University
Revised Course Proposal
CHM 2040G, Practical Chemistry

1. Catalog Description

CHM 2040G. Practical Chemistry. (3-0-3) S. Short Title: Pract Chem

The principle that molecular structure determines chemical and physical properties will be applied to materials encountered in everyday life. The nature of chemical ingredients in common household products such as detergents, personal care items, medicines, etc., will be emphasized. No credit toward the major or minor in chemistry. Writing active.

2. Student Learning Objectives

Goals: EIU graduates will:

- **demonstrate the ability to write and speak effectively.**
- **demonstrate the ability to think critically.**
- **function as responsible citizens.**

Objectives: Students will:

- demonstrate their understanding of scientific concepts via short answers in all quizzes and exams. (writing/speaking, critical thinking)
- complete writing assignments in which they apply principles covered in readings and lectures. (writing/speaking)
- demonstrate an understanding of the relationship between molecular structure and function. (critical thinking)
- predict chemical behavior based on molecular properties. (critical thinking)
- look beyond phenomena to the underlying theories explaining them. (critical thinking)
- analyze and understand ingredient lists in foods, cleaning products, drugs, and many other materials encountered in everyday life. (critical thinking, responsible citizenship)
- understand, from a chemical standpoint, the function of oil/petroleum products, food constituents (fats, oils, proteins, and others), etc. (critical thinking, responsible citizenship)
- critically analyze claims made in advertisements for consumer products. (critical thinking, responsible citizenship)

3. Course Outline

<u>Week</u>	<u>Topic</u>
1	An Introduction to Chemistry
1	Atoms and Elements
2	Chemical Bonding
3	An Introduction to Organic Chemistry
4	Petroleum
5	Acids and Bases
6,7	Energy, Food, Fats, and Oils
8	Carbohydrates
9,10	Medicines and Drugs
11	Cosmetics and Personal Care
12	Surfactants: Soaps and Detergents
13	Proteins and the Chemistry of Life

14	The Chemicals of Food
15	Polymers and Plastics

4. Evaluation of Student Learning

- a. There will be three hour-long examinations, spaced evenly throughout the semester, short quizzes and/or homework assignments, a five/six page research report or several smaller writing assignments, and a comprehensive final examination.
- b. The quizzes/homework and exams will all have a considerable number of short (paragraph) answer questions. The additional writing assignments will make a significant contribution to the total grade. This quantity of writing qualifies this course as **writing active**.

5. Rationale

- a. This course deals with not only chemical principles and theories, but also the application of these concepts to items found in everyday life, so it quite naturally falls into the physical sciences components of the **scientific awareness** segment of the general education curriculum. Students' *reasoning ability* will be considerably strengthened, as they are exposed to the underlying principles behind many everyday products and phenomena that they, thus far, had probably taken for granted.
- b. Practical Chemistry is aimed at sophomores, even though there are no prerequisite courses. However, there is the assumption of a background with significant writing, as so much of the evaluation in this course rests on students' abilities to express themselves clearly in writing. These assumptions dictate a sophomore level.
- c. This course is not similar to any other courses, and no courses will have to be deleted to make room for it (with the obvious exception of the course of the same number and name, but with 2-0-2 hours instead of the 3-0-3 being proposed). It should maintain the same curriculum ID as CHM 2040C. No program modifications are required. As with the two-hour course, this cannot be applied toward the major or minor in chemistry.
- d. This course is not required in any program, major or minor.

6. Implementation

- a. The course can initially be assigned to Drs. Black, Chesnut, Furumo, and E. Keiter.
- b. The textbook being used is Carl H. Snyder, *The Extraordinary Chemistry of Ordinary Things, 3^d Edition*, John Wiley and Sons: New York, 1998.
- c. There are no additional costs to students.
- d. The course will first be offered in Spring 2001.

7. Community College Transfer

A community college course may be judged equivalent to this course.

8. Date approved by the department: 4/11/00

9. Date approved by the college curriculum committee: 4/21/00

10. Date approved by the CAA: 10/19/00

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