

HISTORY OF CHEMISTRY AND SOCIETY

SPRING, 2009

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Prerequisites: Those of any perspectives course (satisfaction of the English Composition competency requirement, that is, English 110; plus at least 24 semester hours of the Liberal Arts Core) CH 102, CH 104, or CH 111; two social science courses—including one history course: HI 101, HI 320, HI 410 preferred.

Textbook: “The Development of Modern Chemistry,” Aaron J. Ihde, Dover Publications, Inc., New York, NY, 1984 (Chapters 3 through 21). *Optional:* “The Historical Background of Chemistry,” Henry M. Leicester, Dover Publications, Inc., New York, NY, 1956 (Chapters I through XIV). \$10 deposit to borrow both books.

Objectives: At the successful completion of this course, you should be able to: (1) explain, and illustrate with at least five specific examples, how the course of history was altered by chemical developments; (2) describe how the science of chemistry developed from prechemistry, including describing how prechemistry was influenced by the societies in which it developed and how each society imparted its own character to the developing discipline; (3) describe how modern chemistry developed and grew, how it was influenced by the political, social, and moral climate of the countries in which it developed, and how it altered these societies; and (4) show how the role and character of science, chemistry particularly, has changed from the 17th century to today.

Format: The course is conducted in discussion format. Because you enrolled in the course, you are assumed to be interested in the history and development of chemistry and how they relate to those of the rest of society. You should maintain and manifest that interest. This means that active participation in class discussions is expected of all members. Your background in history is likely to be different from that of the rest of the class, giving you many opportunities to contribute. The text and the discussion notes will serve as resources for our discussions, as will the short and long papers produced and presented by the members of the class.

Quizzes: There will be at least 10 short quizzes (possibly one per week), 10 minutes in length, given at the beginning of the hour. Please be prompt! The format is either short answer or short essay. Each quiz is worth twenty [20] points, fifteen [15] for content, and five [5] for correct grammar, logical organization, correct spelling, etc.

Reports: Summarize an original paper (try the site <http://webserver.lemoyne.edu/faculty/giunta/papers.html>, but search the web and the library also) and prepare a brief summary of that paper. The topic of your presentation should approximate what we are studying in class. Limit each report to one page in length, typewritten, and double space. Be certain to reference your source. Five reports are due during the semester. Dates will be assigned on a random basis, with possibly two members of the class having reports due each class meeting. One of those individuals will present (not read) his/her report orally. This means that you should be prepared to present your report from notes on a 3 x 5 card.

Discussion: Come to each class prepared to contribute to a lively discussion. A careful reading of the scheduled chapters (along with your notes on your reading) is the minimum you should prepare. Because few texts consider many societal implications of chemistry, discussion notes for the course have been prepared, incorporating information from many sources. Copies will be available at the beginning of the semester. They also include discussion questions and examinations from previous offerings of the course. The cost for the more than 100 pages of notes is \$10.00. The money received for the notes is used to purchase supplies, journals, and books for the course.

Papers: Complete two written papers five to seven pages in length. Final drafts due on the dates indicated on the calendar. A typed half-page proposal for your paper, including four bibliographic citations, is due three weeks before the paper, and will be returned the next class day. The proposal constitutes 20% of the paper's value, and **MUST** be approved ten days before the paper is accepted. (References may not include encyclopedias, course notes, course texts, or juvenile literature. One-third of citations must be non-electronic.) Each paper should discuss how chemical developments influenced or were influenced by world events during the period covered by the course (up to about 1930).

Honors: To receive honors credit for this course, your contributions to daily discussions must indicate investigation beyond the daily reading assignments. In addition, at least three of your reports must exceed a simple summary: replication of a historical experiment, a summary of two or more related papers with a careful explanation of how they are related, an added short nonchemical biography of the chemist of interest, a “tour” of an interesting location, etc.

Philosophy: According to the “1988 Revised General Education Curriculum”, a perspectives course: “(2) must have meaningful writing and oral communications components” and (4) “requires the students to identify, critically analyze, and resolve complex problems (social, cultural, scientific, and/or aesthetic) that require the application of knowledge from two or more academic disciplines and/or cultures.” Writing and discussing help us attain these goals.

Academic Honesty: If you submit someone else's work as your own, you have committed plagiarism. Confer with the instructor if you have doubts. University penalties for academic dishonesty are severe: from an examination or paper grade of zero to expulsion from the University. Academic dishonesty penalties become part of your official record.

Cancelled Classes: “The cancellation of classes by the University does not alter the mutual responsibility of faculty and students to fulfill the requirements of the curriculum.” [Faculty Senate 29 Oct 2001] In the event that classes are cancelled, we shall agree as a class on means to make sure that the content of the course is not compromised.

Absences: YOU ARE RESPONSIBLE for obtaining the notes for any class you miss, whether your absence is excused or not. You must arrange to make up any missed work. Absences may be excused for personal illness, death or critical illness in the family, university-sponsored activities, jury duty, military duty, or religious holidays. Support each request for excuse with a written statement of the absence's reason, signed by the responsible person (physician, coach, faculty member, judge, commander), including that person's phone number. Except for death or illness, requests for excuse must be presented before the date of anticipated absence. This is department and university policy. An excuse for personal illness is granted **ONLY** if a physician states you were too ill to come to class.

Grading	Ten 10-minute Quizzes (20 points each)	200 points	A	B	C	D
(-20% each day late)	Five 1-page Summaries (30 points each)	150 points	90%	80%	70%	60%
(800 points total)	Two 5-page Papers (100 points each)	200 points	720	640	560	480 points
	Contributions to class discussion (evaluated daily)	100 points	“-” is _0, _1, _2			
	90-minute Final Examination	150 points	“+” is _7, _8, _9			

Chemistry 372 nov08version **Spring Semester 2009** **Tentative Course Schedule**

	Monday	Tuesday	Wednesday	Thursday	Friday
JAN	12	13 I Introduction II Early Practical Chemistry	14	15 III Ancient Scientific Ideas IV Greek Science	16
JAN	19 NO CLASSES	20 V Greek Culture/Alchemy Rise VI Chinese Alchemy	21	22 VII Arabic Alchemy VIII Trans.of Chem.West	23
JAN FEB	26	27 IX 14th and 15th Centuries X 16th Century, Technical Chem	28	29 XI Chem.Prac&Theo in 17th XII Spread of Atomistic Theories	30
FEB	2	3 XIII 18th Century Theories XIV Lab Discov of 18th: Gases	4	5 Lavoisier and the Chemical 3 Revolution	6
FEB	9	10 Chemical Combination & 4 Atomic Theory	11	12 Electrochemistry and the 5 Dualistic Theory	13
FEB	16	17 6 The Period of Problems	18	19 Organic Chemistry. I The 7 Rise of Organic Chemistry	20
FEB	23	24 Organic Chemistry II. 8 Organization	25	26 1st PAPER 9 Classification of the Elements	27
MAR	2	M I D – S E M E S T E R		B R E A K	
MAR	9	10 9 Classification of the Elements	11	12 The Diffusion of Chemical 10 Knowledge	13
MAR	16	17 Analytical Chemistry I. 11 Systematization	18	19 Organic Chemistry III. 12 Consolidation	20
MAR	23	24 Organic Chemistry IV. 13 Natural Products	25	26 Inorganic Chemistry IV. 14 Fundamental Developments	27
APR	30	31 Physical Chemistry I 15 Origins	1	2 Biological Chemistry I. 16 Agr, Physiol., Food Studies	3
APR	6	7 Chemical Industry I. 17 The Nineteenth Century	8	9 Radioactivity II: Radio- 18 activity and Atomic Structure	10
APR	13	14 Radioactivity II. 19 The Nuclear Age	15	16 Physical Chemistry II. 20 Maturity 2nd PAPER	17
APR	20	21 Analytical Chemistry II. 21 Expansion	22	23 Last Course Day	24
APR	27	28 FINAL MONDAY 27 APRIL	29	30 8 TO 10 A.M.	1