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102-01 Chemistry: Environment and Energy

Mary Stroud
stroud@xavier.edu

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Instructor: Dr. Mary W. Stroud, stroud@xavier.edu, Office: Logan 103 E; Phone: 513.745.3359
OH: M: 1:00p to 1:45 p; T,W,F - 11:30 a - 12:20p and by appointment. Class Meetings: T & R: 8:30a – 9:20a, Logan 2

Course Description: This course provides a general overview of basic concepts of chemistry while emphasizing how chemistry is relevant to selected environmental and sustainability issues in everyday life. One intent of the course is to stimulate critical thinking and foster problem solving skills so that students are better equipped to evaluate relevant issues they face in society as they utilize science knowledge. Only basic mathematical operations will be used in this course.

Teaching Philosophy and Strategy- While traditional lecture may be used in this course, active learning approaches are also employed. Learning tasks assigned in this class are designed to enhance student participation, engagement and learning as students consider chemistry concepts.

Student Learning Outcomes: At the end of the semester and course, students should be able to:

1. Demonstrate, with at least 60% average proficiency on assessments and assignments, an understanding of the scientific method and basic chemical principles including those defining matter, bonding and reactions as covered in the course.
2. Apply scientific reasoning to evaluate scientific information and solve straightforward problems using chemical principles.
3. Discern and discuss the relevance and importance of chemistry and its relationship to energy, the environment and other everyday issues in society.
4. Recognize the societal, ethical and moral dimension of science and technology.

Text: Joesten, Melvin and John L. Hogg, *CHEM in Your World*, 2011 ed, Brooks/Cole Cengage Learning, 2011.

Tentative Schedule- Spring, 2020

Date	Chapter, topic	Assessments/other comments
1/14, 1/16	Chapter 1 – Introduction, Living in a World of Chemistry; Scientific Method/Perspectives	
1/21, 1/23, 1/28	Chapter 2–Matter. Measurements, Chemical & Physical Changes; Changes in Energy	<i>Case Study 1- EEI Enterprises Case 1 Reflection due 1/20/20</i>
1/30, 2/4	Chapter 3 –The Periodic Table	
2/6	TEST I - Chapters 1, 2 & 3	
2/11, 2/13	Chapter 5 –Bonding; Ionic /Molecular Substances	
2/18, 2/20	Chapters 8 & 10– Chemical Reactivity ; Redox	<i>Case Study 2- Bauxite – What’s It to You? Reflection Due 2/20/20</i>
2/27	Test II –Chapters 5, 8,10	
2/25, 3/3/ 3/5	Chapter 12- Energy (Fossil Fuels./ Hydrocarbons)	<i>Coal and the Environment Assignment- Reflection Due 3/5/20 (Class does not meet)</i>
3/10, 3/12	NO CLASS – SPRING BREAK	
3/17, 3/19	Alternative Energy Sources Chapter 4 – The Air We Breathe	<i>Case Study 3 (Group)- Energy; Due 3/19/20</i>
3/24, 3/26	Chapters 4 & 6- Air; CO ₂ & Greenhouse Effect	<i>Case Study 4 (Group) - Air; Due 3/26/20</i>
3/31, 4/2	Special Topic: Municipal Solid Waste (MSW)	<i>Off Campus Tour-Colerain MSW Waste Facility -4/2/20</i>
4/7, 4/9	Test III – Chapters 4, 6, 12 & MSW on 4/7	NO CLASS- EASTER BREAK on 4/9
4/14, 4/16	MSW (<i>continued.</i>); Chapter 11- Water	<i>Case Study 5 (Group)- Waste; Due 4/16/20</i>
4/21, 4/23	Chapter 11- Water	<i>Off- Campus Tour MSD Facility- 4/21/20</i>
4/28, 4/30	Chapter 11- Water (<i>continued</i>)	<i>Case Study 6 (Group)- Water-Due 4/23/20</i>
5/7	FINAL EXAM (Test IV) 8:30am -10:20 am.	5/7/2020 Chapters 11, 12 & 13

COURSE REQUIREMENTS

Academic Honesty: The expectation is that there will be no violations of the accepted canons of academic honesty. Cheating on an exam will result in a grade of zero for that test. The University Catalog (p. 30) deals with penalties, and hearing and appeals processes relating to academic honesty issues

Attendance: Regular attendance is highly recommended.

Assignments: To assist understanding of the material, students should a) read/review the appropriate sections from the text or assigned online sources b) take detailed notes in class c) review class notes promptly and d) conscientiously complete assignments. Specific assignment categories and assignment point values are listed below.

1) *In-class/Miscellaneous Assignments (~55 pts total possible)* - a) At times, students will be asked to complete in-class assignments (surveys, group exercises, etc.) Such exercises are generally not announced in advanced, but are utilized during class to enhance the discussion of material. Students receive credit for their presence and participation.

b) Short Summaries(Current Event Articles/ Other Summaries) - As announced, students may submit current event news articles (no more than 3 months old) related to the general topics of chemistry and everyday living or scientific / technological developments, innovations or techniques. Suggested sources include the daily newspapers, *Time*, *Newsweek* and *Scientific American* magazines and reputable online sources. A brief, one to two paragraph write up is required and should include the article reference (source and date) along with a summary of the article and its relevance to science, the environment, et cetera. Other summaries

For credit, summaries along with the electronic or scanned copy of the article or hyperlink (URL) should be electronically submitted on or before the due date via Canvas. If requested, students may bring a copy of the article and summary to class for possible discussion.

3) ****Group Project -Case Study Presentation (100 pts possible)** - In cooperation with other class members, students must complete, a visual/narrative presentation which discusses/ investigates/examines/ explores a key case or event involving an environmental issue (air, water, energy, waste management). The group must also submit a detailed, written summary of the assigned case. The overall project will be graded on the depth of knowledge and perspective displayed, considering the rubrics for both the presentation and written summary.

4) ****Case Study Reflections (Submit 3 @15 pts each)** - ****Note:** All students must summarize Case 1. Then, for each case, other than the group project, students must submit a written one to two page summary reflection for either A OR B as noted on the syllabus. Reflections are due by the date posted for the assignment.

5) Tests(4 @ 80 pts each) - Tests will cover a) Information, handouts and topics presented and discussed during lecture b) Assigned auxiliary materials including videos and outside reading.

A total of four (4) tests will be given. Each test will cover two to three chapters as announced in class.

Note: Tests I, II and III are tentatively scheduled as listed on the syllabus. Test IV is scheduled during finals week, on Tuesday 5/7/19 8:30 a. - 10:20 a, Logan 2.

Students are responsible for taking tests at the scheduled times. Make-up tests will only be given under extremely extenuating circumstances, with proof of illness (physician's note), emergency, or some other conflicting event. Notice of an illness or conflict MUST be made in person or by phone BEFORE the testing period.

Grade Determination (500 Total Points possible): Tests –320 pts; Group Project (Case Study Presentation) – 100 pts Case Study Reflections 3@15 pts – 45pts; Other Miscellaneous Assignments (In-Class, Current Events, etc.)- 35 pts

Grading Scale (Based on % of total possible points):

93-100 A	90-92 A-	87-89 B+	83-86 B	80-82 B-
77-79 C+	73-76 C	70-72 C-	60-69 D	59 and below F

Note: According to the Xavier University Catalog, a grade of "A" is earned for "EXCEPTIONAL" performance. This is also the agreed grading policy of the faculty in the Chemistry Dept.;

For more information, go to the website http://www.xu.edu/chemistry_dept/grade_policy.htm