Chemistry in Context, CH 101
Master Syllabus
Department of Chemistry, Washburn University

Purpose: "This course introduces and applies major laws, concepts, and theories of chemistry in relation to environmental and energy issues confronting contemporary society."

This course will satisfy the general education requirements in Natural Sciences and Mathematics distribution. The Washburn University Student Learning Outcome (U-SLO) which will be assessed in this course is "Quantitative and Scientific Reasoning and Literacy" given the three following objectives.

Objective 1: Demonstrate an understanding of scientific theories and their relationship to physical and chemical properties. This objective will be assessed using a minimum of 25% of the questions on the final exam.

Beginning, 1: >0% - 60%; Developing, 2: >60%-70%; Target, 3: >70%-86%; Advanced, 4: >86%

Objective 2: Demonstrate an understanding of how chemistry impacts health, climate and/or energy. This objective will be assessed using a minimum of 25% of the questions on the final exam.

Beginning, 1: >0% - 60%; Developing, 2: >60%-70%; Target, 3: >70%-86%; Advanced, 4: >86%

Objective 3: Identify scientific issues underlying national and local decisions and express ideas that are scientifically and technically informed. This objective will be assessed using a paper which is evaluated by the Scientific Reasoning Report Rubric.

Beginning, 1: 1-4; Developing, 2: 5-10; Target, 3: 11-15; Advanced, 4: 16-20

An average of these three will be reported for the overall U-SLO score.

Course grades will be determined using a combination of on-line discussion boards, in class discussions, Homework assignments, exams, a final exam and one or more papers. Graded assignments used to assess the U-SLO include one common paper assignment assessing Objective 3, which is a minimum of 10% of the final grade. In addition, a minimum of 50% of the final exam will be common and assess Objectives 1 & 2. The final exam is a minimum of 30% of the final grade.

Student final grades typically average a C.

Prerequisite: none

Textbook (as specified in the instructor syllabus):

- *Chemistry in Context: Applying Chemistry to Society*, 9th Ed., by Fahlman, et.al. 2018 (required)
- *Connect Chemistry Online Access* (required)
- Scientific calculator (required)

revised 11/15/17

Scientific Reasoning Report Rubric

Criteria	Well Below Expectations 1	Below Expectations 2	Meets Expectations 3	Exceeds Expectations 4	Score
1. Identify Scientific Issues (The student articulates the scientific concepts forming the premise of the assignment.)	No mention of the relevant science	Some scientific ideas mentioned but not developed.	Most scientific ideas mentioned and somewhat developed	All science relevant to the assignment is identified and discussed – tying together scientific concepts learned in class.	
2 .Evaluation of the Data (The student considers quantitative information. E.g., the student evaluates the efficacy of the data using criteria such as limitations, source of the data, potential bias, timeliness, credibility, relevance, usefulness, etc.)	Does not question the data (assumes the data are valid).	Identifies some questions about the data but does not answer them.	Asks useful questions about the data and attempts to answer them.	Asks insightful questions about the data and uses quantitative reasoning to discuss the strengths and weaknesses in the data.	
3. Quality of Science (The student evaluates the quality of scientific information on the basis of its sources and methods)	No analysis of methods or sources	Questions methods or sources inappropriately	Correct but minimum analysis of methods and sources	Well-developed analysis of methods and sources in support or denial of the science.	
4. Evidence (The student will pose and evaluate arguments based on evidence and apply conclusions appropriately.)	No mention of evidence or its relevance	Identifies some evidence and how it applies to the arguments presented	Presents relationship between evidence and argument but not evaluated	Captures all arguments as they apply to relevant evidence. Evidence is evaluated. Conclusions are evaluated in light of evidence.	
5.Organization/Grammar (The student will communicate effectively, following rules of grammar and construction.)	Difficulty understanding the premise of the paper. Statements made randomly.	Attempts to organize and represent information but fundamental errors in grammar.	Mostly organized, a few grammatical errors. Good opening and closing paragraphs.	Appropriate title and opening/closing paragraphs. Opening sentences. Rules of grammar and spelling followed. Easy to follow.	