

**Core Curriculum Course Submission  
Criteria: Science**

**1. General Information**

<b>a. Originating Person</b>	<b>b. Contact Person's E-mail</b>	<b>c. Contact Phone</b>	<b>d. Date</b>
Marian Douglas	<a href="mailto:msdouglas@ualr.edu">msdouglas@ualr.edu</a>	(501)569-8826	04/15/2014
<b>e. College/School</b>	<b>f. Department/Program</b>		
College of Arts, Letters, & Sciences	Chemistry		

**Submission Statement**

By submitting this form, we acknowledge our understanding that the Core Council has the authority to review approved courses to ensure they continue to meet the established goals and outcomes of that category of the core; that the Council has authority to develop a core assessment program; and that the Council will be developing review and assessment policies by the end of 2014. Further, we agree that if this course is approved, we will participate in the university-wide assessment of the core.

**Chair and Dean Awareness**

Your department chairperson and college dean must be made aware of your submission for core. By submitting this form, you are acknowledging that this has occurred.

**2. Course Information**

<b>a. Course ID</b>	<b>b. Current Title</b>
CHEM 1409	Chemistry and Society

**c. Catalog Description**

The class develops a base of chemical knowledge for students to consider the impact chemistry has on the world while meeting the goals of the University's core curriculum competencies in critical thinking, ethical and moral consciousness, historical consciousness, mathematics, and philosophy and methods of science. Material will address topics starting with the atomic and molecular foundations of chemistry to applying principles of scientific modeling to topics such as the environment, medicine, and public policy. The class satisfies four hours of the University's laboratory science curriculum requirement and meets ACTS criteria. Three hour-long lectures and one three-hour laboratory per week. Four credit hours.

**d. How will your department ensure a level of consistency among sections of this course? Who will be responsible for this?**

The Chemistry Department Curriculum Committee will approve a common syllabus to be used each semester in all sections of CHEM 1409. The syllabus will be given to all CHEM 1409 instructors to use in developing their semester schedule for the course. New faculty and new adjuncts will be given a copy of the grid submitted to the Core Council with instructions to use it in planning their course.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
<b>Knowledge 1 – Concepts, methodologies, findings, and applications of mathematics and the social and natural sciences, engineering and technology.</b>	1. understand the theoretical perspective used in one or more science discipline;	<b>Learning Objectives 1.1</b> identify basic principles of atomic structure and chemical bonding, apply chemical principles to everyday experiences (food, health, environment), and use chemical language to describe chemical changes.	<b>Assignments 1.1</b> Quizzes, exams and writing assignments.	<b>Explanation 1.1</b> Quizzes are given periodically to allow students to determine if they are mastering the material adequately before exams are given.
	2. understand observational and experimental methods used in one or more of the sciences;	<b>Learning Objectives 1.2</b> make basic calculations describing physical and chemical properties and changes in matter after conducting laboratory experiments.	<b>Assignments 1.2</b> Quizzes, exams and lab reports.	<b>Explanation 1.2</b> <b>Making observations and calculations based on experimental methods is central to chemistry.</b>
	3. understand applications and limitations of the sciences;	<b>Learning Objectives 1.3</b> 1. describe how the characteristics of elements impact their properties and uses in everyday life. 2. demonstrate how the characteristics of chemical compounds impact their properties and uses in everyday life.	<b>Assignments 1.3</b> Writing assignments and exams.	<b>Explanation 1.3</b> At the completion of the writing assignments and exams, the students can research a topic and demonstrate that current understanding of the world is the result of an evolution of knowledge that will continue to change as new discoveries and explanations are developed.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
<b>Skills 1 – Communication</b>	1. develop an understanding of how to communicate scientific procedures, results from the inquiry and conclusions resulting from applying the scientific method;	<b>Learning Objectives 1.1</b> express the results of applying the scientific method using chemical formula, equations, Lewis dot formula for compounds, and graphs to communicate the importance of that information.	<b>Assignments 1.1</b> Quizzes, exams, laboratory reports, a paper and an oral presentation.	<b>Explanation 1.1</b> The ability to communicate chemical knowledge requires use of the chemical language that students develop through repeated practice in written and oral formats.
Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
<b>Skills 2 – Critical Thinking, Quantitative Reasoning, and Solving Problems Individually and Collaboratively</b>	1. develop basic skills from the scientific method including inquiry, data collection, analysis, and interpretation in order to explore a scientific problem from hypothesis testing to formulating a conclusion based on the inquiry;	<b>Learning Objectives 2.1</b> conduct laboratory experiments following a prescribed procedure that employs the scientific method collecting data and making observations, making calculations, and analyzing and interpreting the results of the experiments.	<b>Assignments 2.1</b> Conduct experiments and prepare laboratory reports.	<b>Explanation 2.1</b> Students initially learn how to employ the scientific method by following prescribed laboratory experiments.
	2. learn about the world through observation and experimentation, through modeling and interpretation, and through analysis and evaluation;	<b>Learning Objectives 2.2</b> generate an experimental design employing the scientific method and use that design to solve a chemical problem	<b>Assignments 2.2</b> Design an experimental procedure to solve a chemical question or problem, conduct that experiment and then draw conclusions based on interpreting the results.	<b>Explanation 2.2</b> As students gains experience in conducting prescribed lab experiments, the students can extend the understanding of the scientific method by designing and conducting experiments.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
<b>Skills 3 – Information Technology</b>	1. develop and apply technological tools for inquiry, analysis, and presentation of scientific information and data;	<b>Learning Objectives 3.1</b> 1. use basic chemical instrumentation such as balances, thermometers and hydrometers to make measurements of physical and chemical properties of matter and its changes. 2. use web-based sources that are evaluated as being valid to research topics, and use word-processing and presentation software to communicate chemical information.	<b>Assignments 3.1</b> Lab reports, written papers and oral presentations.	<b>Explanation 3.1</b> The use of laboratory instrumentation and computer software to communicate chemical information is an essential element in the development of chemical knowledge.
Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
<b>Values 1 – Personal Responsibility and Ethical Behavior</b>	1. take responsibility for completing assignments in an ethical manner, working on one's own when required and acknowledging resources when used;	<b>Learning Objectives 1.1</b> Evaluate chemical questions and chemical problems individually or acknowledge the contributions from other resources.	<b>Assignments 1.1</b> <b>Exams, quizzes and papers</b>	<b>Explanation 1.1</b> <b>The ability to differentiate between work conducted individually or work conducted by others is expected by all students of science.</b>
	2. develop an understanding of the ethical obligations in conducting research, and of being precise and accurate with data, including how this obligation applies to communication of information;	<b>Learning Objectives 1.2</b> Demonstrate a basic understanding of precision and accuracy in data collection and calculations and their impact on conclusions drawn from experimental data in the process of comparing and evaluating their results and others.	<b>Assignments 1.2</b> Post-lab questions and discussions	<b>Explanation 1.2</b> Experimental data is compiled For all students followed by a Discussion and critiquing of Individual data points.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
<b>Values 2 – Civic Responsibility</b>	1. develop an understanding of the ethical issues that may result when applying scientific knowledge that is incomplete.	<b>Learning Objectives 2.1</b> Evaluate a problem and make economic, political, governmental and environmental decisions from the perspective of science.	<b>Assignments 2.1</b> Quizzes, exams, written papers, oral presentations and discussions of case studies.	<b>Explanation 2.1</b> Many economic, political, governmental and environmental decisions must be based on current scientific knowledge, with the understanding and obligation to modify and change those decisions as new scientific knowledge emerges.

**Additional Comments:**

This course is designed to help students, not majoring in a science, develop a basic understanding of chemistry as an experimental science in order to affect real-life decisions in economics, politics, government, and the environment.

Belenita Blevins Creech  
Approved by Core Curriculum Committee

5-16-14  
Date

[Signature]  
Approved by Provost

5/7/2014  
Date

[Signature]  
Approved by Chancellor

5/8/14  
Date