NorthWest Arkansas Community College
Division of Science & Mathematics

CHEM 1054 Chemistry and the Modern World

Catalogue Description: A one-semester introductory course covering general inorganic, organic and biochemical concepts. This course is designed especially for non-science majors focusing on the economic, social, health and ecological impact of chemicals in modern society. This course provides understanding of basic chemical concepts through investigating various topics such as environment, ecology, nutrition and health. GIS (Geographic Information Science) activities and/or demonstrations utilize to reinforce curriculum elements. Three hours lecture and 3 hours laboratory weekly.

Prerequisites: None, though some basic math/ algebra will be used in the course

Credit hours/ Contact hours/ Load hours: 4 /6 /5

Target Audience/Transferability: This course is designed for non-science majors who need to satisfy a 4-hour science requirement. This course will not transfer as science credit for science majors.

Student Learning Outcomes: Students completing this course will:

- Employ the scientific method of investigation by applying the principles in "hands-on" laboratory experiments with written reports.
- Utilize dimensional analysis in solving scientific problems and making laboratory measurements.
- Explain the Periodic Law and the recurring properties of atoms. Use these properties to predict the types of bonding (ionic, polar or covalent) in chemical compounds.
- Describe the differences between chemical and nuclear reactions and write given reactions.
- Demonstrate the use of the gas laws and show their relevance to the atmosphere.

Topics:

Chemical Concepts	On Campus Course	On-line Course
• Measurements and Scientific Method		Everything—Overview of Composition of Matter
• Classifying Matter and Formulas and names	The Air We Breathe	Everything—Overview of Composition of Matter Dirt—How Atoms Interact
• Periodic Table	Protecting the Ozone Layer	Everything—Overview of Composition of Matter Dirt—How Atoms Interact
• Atomic Structure	Protecting the Ozone Layer	Everything—Overview of Composition of Matter
• Chemical Bonds and Reactions	The Air We Breathe	Everything—Overview of Composition of Matter Dirt—How Atoms Interact Diamonds—Carbon &

		Organic Molecules
• Molecular Structure and Shape	Protecting the Ozone Layer Global Warming	Diamonds—Carbon & Organic Molecules
• Quantitative Concepts	Global Warming	Dirt—How Atoms Interact
Radiation	Protecting the Ozone Layer Nuclear Fission	Sunshine—Study of Nuclear Events
• Energy	Energy, Chemistry and Society	Water—Intermolecular Interactions Explosives—Forces within Molecules
• Solutions	The Water We Drink	Salt—Study of Ions (including Acids & Bases) Water—Intermolecular Interactions
• Acids and Bases	Acid Rain	Salt—Study of Ions (including Acids & Bases)

Forms of Assessment: None