

**Core Curriculum Course Submission
Criteria: Science**

1. General Information

a. Originating Person	b. Contact Person's E-mail	c. Contact Phone	d. Date
Laura Ruhl	lsruhl@ualr.edu	501-683-4197	04/15/2014
e. College/School	f. Department/Program		
Donaghey Colleg of Engineering Infromation Tec	Earth Sciences		

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

A separate statement from the chair must be included that states that the department faculty have approved this course for submission to the core and that the chair takes responsibility for informing the Dean about the submission of the course.

2. Course Information

a. Course ID	b. Current Title
ERSC 1304/1104	Earth and the Envrionment

c. Catalog Description

ERSC 1304 Earth and the Environment

This is an introductory environmental geology course that examines interactions between human beings and our ever-changing planet, the effects of geologic hazards on humans, and anthropogenic (human-caused) impacts on nature, geology, and society. Fundamental geologic concepts such as minerals, rock formation, plate tectonics, geologic time, and surficial processes are used as a basis for understanding a variety of natural processes. The course topics include geologic hazards (earthquakes, volcanoes, landslides, costal processes, and land subsidence), climate change, earth resources, as well as the impact of mineral extraction and water resource utilization. Taken along with ERSC 1104, equivalent to GEOL 1124 in ADHE common course numbering system.

ERSC 1104: Earth and Environment Laboratory

Prerequisite or corequisite: ERSC 1304. A laboratory course designed to accompany ERSC 1304. Students make observations and interpretations from case studies; gather, manipulate, and interpret data; make field measurements; and problem solve using minerals, rocks, maps, and graphs. Topics covered in the lab include minerals, rocks, weathering, tectonics, geologic hazards, earth systems, and resources. The laboratory meets for two hours per week. One credit hour. Taken along with ERSC 1304, equivalent to GEOL 1124 in ADHE common course numbering system.

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

The department's curriculum committee will review all syllabi for ERSC 1304/1104 each semester examining whether all learning objectives are covered. This will include verifying that the assignments cover the learning objectives. The curriculum committee will report their findings to the chair who will ensure that course deficiencies are immediately corrected. New faculty will be provided a copy of the Educational Goals and Learning Outcomes form submitted to the core council with instructions to use it, and consultation with previous course instructors, to plan their course.

Educational Goals	Learning Outcomes students will	Learning Objectives: At the end of the course students will be able to	Assignments	Explanation
Knowledge 1 – Concepts, methodologies, findings, and applications of mathematics and the social and natural sciences, engineering and technology.	1. understand the theoretical perspective used in one or more science discipline;	Learning Objectives 1.1 Demonstrate their comprehension of the major concepts and theories in earth science and environmental geology	Assignments 1.1 Exams, assignments, and laboratory exercises	Explanation 1.1 Exams cover major principles and theories in environmental geology, such as major earth processes, geologic hazards, natural resources, and hydrologic processes. The assignments require students to think critically and explain major concepts and theories related to the earth and environment, and how these can be used to understand and predict geologic phenomena, as well as how they can impact humans.
	2. understand observational and experimental methods	Learning Objectives 1.2	Assignments 1.2	Explanation 1.2

	<p>used in one or more of the sciences;</p>	<p>Demonstrate awareness and comprehension of how scientists collect data through observations, insitu monitoring, and experiments.</p>	<p>Exams, assignments, and laboratory exercises</p>	<p>Exam questions, assignments and laboratory exercises cover diverse methods of data collection – for example how environmental and field observations, in situ monitoring of the earth and atmosphere, and controlled laboratory experiments help geologists understand how geologic processes impact humans, like plate tectonics resulting in natural disasters. In laboratory, students will apply the scientific method to environmental questions. Assignments may be in-class or homework.</p>
	<p>3. understand applications and limitations of the sciences;</p>	<p>Learning Objectives 1.3 Demonstrate awareness and comprehension of the impact of the Earth Sciences on society.</p>	<p>Assignments 1.3 Exams, assignments, and laboratory exercises</p>	<p>Explanation 1.3 Exam questions, assignments and laboratory exercises cover the diverse applications and limitations of the science of geology - for example understanding that many things can affect the earth's climate such as anthropogenic carbon dioxide and methane releases as well volcanic eruptions. These applications allow geologists to use modern, directly-observable processes to interpret events from the past, even though it is impossible to run long-term experiments to</p>

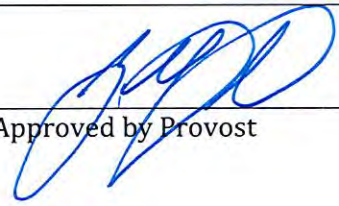
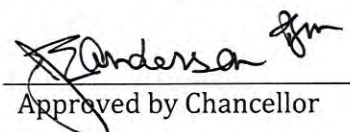
				test these interpretations.
Educational Goals	Learning Outcomes students will	Learning Objectives: At the end of the course students will be able to	Assignments	Explanation
Skills 1 – Communication	1. develop an understanding of how to communicate scientific procedures, results from the inquiry and conclusions resulting from applying the scientific method;	Learning Objectives 1.1 Demonstrate the ability to communicate their understanding of how scientists know about how the Earth works and apply that to environmental problems.	Assignments 1.1 Laboratory Exercises	Explanation 1.1 Laboratory exercises will include written work following the scientific method.
Educational Goals	Learning Outcomes students will	Learning Objectives: At the end of the course students will be able to	Assignments	Explanation
Skills 2 – Critical Thinking, Quantitative Reasoning, and Solving Problems Individually and Collaboratively	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;	Learning Objectives 2.1 Demonstrate critical thinking, quantitative reasoning and problem solving through data collection, data analysis, interpretation of results, hypothesis testing and making conclusions	Assignments 2.1 Exams, Laboratory exercises	Explanation 2.1 Laboratory exercises will include hypothesis development, hypothesis testing, data collection, data analysis, and drawing conclusions. Students work collaboratively in pairs or small groups. Exams will cover individual efforts in this skill set.
	2. learn about the world through observation and experimentation, through modeling and interpretation, and through analysis and evaluation;	Learning Objectives 2.2 Demonstrate critical thinking, quantitative reasoning and problem solving by making observations, reviewing experiments, interpreting models, and analyzing and evaluating results.	Assignments 2.2 Exams, Laboratory exercises	Explanation 2.2 Laboratory exercises will require students to make observations, to understand experiments and be able to use some simple experimental methods, to understand modeling and to use some simple models, and

				<p>to analyze and evaluate data derived from all of these sources. Students work collaboratively in pairs or small groups. Exams will cover individual efforts in this skill set.</p>
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Educational Goals	Learning Outcomes students will	Learning Objectives: At the end of the course students will be able to	Assignments	Explanation
Skills 3 – Information Technology	1. develop and apply technological tools for inquiry, analysis, and presentation of scientific information and data;	Learning Objectives 3.1 Apply technical knowledge of relevant computer applications, laboratory methods, and field methods to solve applied geological problems.	Assignments 3.1 Exams, Laboratory exercises	Explanation 3.1 Laboratory exercises include use of computer technology, field technology, and laboratory technology to collect, analyze and present data. Assignments include use of online technology - search engines, interactive websites, and geospatial websites - for data collection and analysis.
Educational Goals	Learning Outcomes students will	Learning Objectives: At the end of the course students will be able to	Assignments	Explanation
Values 1 – Personal Responsibility and Ethical Behavior	1. take responsibility for completing assignments in an ethical manner, working on one's own when required and acknowledging resources when used;	Learning Objectives 1.1 Avoid plagiarism, cite correctly from reference sources, and follow the UALR policies on academic integrity.	Assignments 1.1 Exams, assignments, Laboratory exercises	Explanation 1.1 The syllabus contains the instructor's expectations for personal responsibility and ethical behavior.
	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;	Learning Objectives 1.2 Demonstrate an awareness of the ethical guidelines for conducting and communicating scientific research.	Assignments 1.2 Assignments and/or discussions.	Explanation 1.2 Ethical conduct that has been identified within the scientific community will be a source of discussion material and/or critical thinking questions.
Educational Goals	Learning Outcomes students will	Learning Objectives: At the end of the course students will be able to	Assignments	Explanation
Values 2 – Civic	1. develop an understanding	Learning Objectives 2.1	Assignments 2.1	Explanation 2.1

Responsibility	of the ethical issues that may result when applying scientific knowledge that is incomplete.	Demonstrate awareness of the ethical obligations of communicating uncertainty.	Assignments and/or discussions	Ethical issues that have been raised in the media will be a source of discussion material or critical thinking questions. For example, a discussion might focus on water quality and contaminant limits. For instance, this year thousands of people were unable to drink water from their taps due to the algal bloom in Lake Erie. Nutrients in fertilizers and sewer systems can contribute to the excess phosphorus which can lead to the harmful algal blooms. Uncertainty in sources of the nutrients, as well as allowable discharge concentrations from upstream sources, makes this issue a difficult one to control in terms of algal blooms, and setting up regulatory limits.
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Additional Comments:

<u>Belinda Blewins - Knabe</u> Approved by Core Curriculum Committee	<u>10-27-14</u> Date	 Approved by Provost	<u>11/7/2014</u> Date
 Approved by Chancellor	<u>11/4/14</u> Date		