

**DEREE COLLEGE SYLLABUS FOR:**

**GG 1000 ENVIRONMENTAL GEOLOGY**

**3/2/4**

**UK LEVEL: 4  
UK CREDITS: 20**

(Updated Fall 2025)

**PREREQUISITES:**

No prerequisites

**CATALOG  
DESCRIPTION:**

An interdisciplinary approach to studying environmental geosciences. Fundamental geologic concepts such as plate tectonics, geologic time and surficial processes are used as a basis for understanding a variety of natural processes. Elaboration on topics of physical geology and geomorphology, including the rock cycle and plate tectonics, occurrence and distribution of geologic hazards and resources, interactions between humans and the geologic environment, and the issues associated with the exploitation of geologic resources, such as water pollution.

**RATIONALE:**

Environmental Geology is a broad topic encompassing both the effect of humankind on Earth and the effect of significant geologic processes on life on Earth. Environmental Geology focuses on the interaction of humans and the geological environment. As the world's population grows and expands, humans are placing a greater demand on earth resources, increasing the volume and extent of environmental pollution and encountering natural hazards more frequently. Consumers and decision-makers need to understand the scope and impact of these changes and the limitations that science and technology have in reducing their negative effects. Studying environmental geology provides a valuable perspective for this understanding.

**LEARNING OUTCOMES:**

- As a result of taking this course, the student should be able to:
1. Explain the geological origin and societal importance of a variety of common rocks & minerals, identify systems and cycles of the Earth (including Plate Tectonics, the Rock Cycle, and the Hydrologic Cycle) and explain how humans interact with these systems and cycles.
  2. Identify and outline common geologic hazards, their geologic and anthropogenic origins and methods by which their negative impacts on civilization can be mitigated.
  3. Discuss the occurrence and geologic origin of natural resources and evaluate environmental issues involved with their extraction, use, and disposal.
  4. Critically evaluate scientific data that relates to environmental issues, as well as scientific and new media accounts of geologic events and of the probabilities and risks of geologic and environmental hazards.
  5. Develop skills for using basic methods in geology including the ability to use appropriate laboratory and field equipment and to acquire, process and evaluate field data.

**METHOD OF TEACHING  
AND LEARNING:**

In congruence with the learning and teaching strategy of the college, the following tools are used:

- Class lectures, interactive learning (class discussions, group work), video presentations, and practical problems solved in class.
- Exercises and primary source documents are assigned as homework and are discussed and reviewed in class
- Laboratory and field activities (including practical work and laboratory reports).
- Use of textbook web site ([www.prenhall.com/keller](http://www.prenhall.com/keller)), CD-ROMs and online resources.
- Office hours: students are encouraged to make full use of the office

	<p>hours of their instructor, where they can ask questions, see their exam paper, and/or go over lecture/lab material.</p> <ul style="list-style-type: none"> <li>Use of a blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.</li> </ul>														
<b>ASSESSMENT:</b>	<table border="1"> <tr> <td colspan="2"><b>Summative:</b></td> </tr> <tr> <td>Midterm examination (2 hours) (Multiple choice/short answers/essay questions)</td> <td><b>30%</b></td> </tr> <tr> <td>Final examination (2 hours) (Multiple choice/short answers/essay questions) non-comprehensive</td> <td><b>40%</b></td> </tr> <tr> <td>Lab report(s)</td> <td><b>30%</b></td> </tr> <tr> <td colspan="2"><b>Formative:</b></td> </tr> <tr> <td>Essay questions (as homework assignments)</td> <td><b>0</b></td> </tr> <tr> <td>In-class or online quizzes</td> <td><b>0</b></td> </tr> </table> <p>The formative tests aim to prepare students for the examinations. Students are expected to submit feedback on their performance. The lab reports test Learning Outcomes 5, 6 and 7. The midterm examination tests Learning Outcomes 1 and 2. The final examination tests Learning Outcomes 3 and 4.</p>	<b>Summative:</b>		Midterm examination (2 hours) (Multiple choice/short answers/essay questions)	<b>30%</b>	Final examination (2 hours) (Multiple choice/short answers/essay questions) non-comprehensive	<b>40%</b>	Lab report(s)	<b>30%</b>	<b>Formative:</b>		Essay questions (as homework assignments)	<b>0</b>	In-class or online quizzes	<b>0</b>
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<b>INDICATIVE READING:</b>	<p><b>Required Reading:</b></p> <ul style="list-style-type: none"> <li>Hudson, T. (2011). <i>Living with Earth: An Introduction to Environmental Geology</i> (1st ed.). Routledge.</li> </ul> <p><b>Recommended Readings:</b></p> <ul style="list-style-type: none"> <li>Freeman, T. 2004. <i>Environmental Geology Laboratory</i>. Wiley Press</li> <li>Keller, E.A. 2012. <i>Introduction to Environmental Geology</i>. 5<sup>th</sup> edition, Pearson Prentice Hall</li> </ul>														
<b>INDICATIVE MATERIAL:</b> (e.g. audiovisual, digital material, etc.)	<p><b>REQUIRED MATERIAL:</b> N/A</p> <p><b>RECOMMENDED MATERIAL:</b> N/A</p>														
<b>COMMUNICATION REQUIREMENTS:</b>	Verbal skills using academic/professional English														
<b>SOFTWARE REQUIREMENTS:</b>	Word, PowerPoint, Excel														
<b>WWW RESOURCES:</b>	<ul style="list-style-type: none"> <li>Textbook web site: <a href="http://www.prenhall.com/keller">http://www.prenhall.com/keller</a></li> </ul>														
<b>INDICATIVE CONTENT:</b>	<ol style="list-style-type: none"> <li>Foundations of Environmental Geology <ul style="list-style-type: none"> <li>Philosophy and Fundamental Concepts</li> <li>Internal Structure of the Earth and Plate Tectonics</li> <li>Minerals and Rocks</li> </ul> </li> <li>Earth Processes and Natural Hazards <ul style="list-style-type: none"> <li>Introduction to Natural Hazards</li> <li>Earthquakes and Related Phenomena</li> <li>Rivers and Flooding</li> <li>Slope Processes, Landslides, and Subsidence</li> <li>Coastal Processes</li> </ul> </li> </ol>														

3. Resources and Pollution
  - Water Resources
  - Water Pollution
  - Soils and Environment
4. Environmental Management, Global Perspectives, and Society
  - Geology, Society, and the Future

**LAB OUTLINE:**

Lab activities are performed in the laboratory or outdoors.

Examples of lab activity topics include, but are not limited to, the following:

1. Maps positioning Geological Maps (part 1)
2. Maps positioning Geological Maps (part 2)
3. Mineral and Rock Identification (part 1)
4. Mineral and Rock Identification (part 2)
5. Weathering, Slopes and Subsidence (optional)
6. Coastal Processes and Problems
7. Soil analysis (part 1)
8. Soil analysis (part 2)
9. Field Trip