COURSE TITLE: Environmental Geology
COURSE NUMBER: BIOL-0155
CREDIT HOURS: 3
INSTRUCTOR: DEPARTMENTAL SYLLABUS
OFFICE LOCATION: DEPARTMENTAL SYLLABUS
OFFICE HOURS: DEPARTMENTAL SYLLABUS
TELEPHONE: DEPARTMENTAL SYLLABUS
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KCKCC issued email accounts are the official means for electronically communicating with our students.

PREREQUISITE: None

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text in this area.

COURSE DESCRIPTION:
Environmental Geology is an introduction to our natural environment and the human interactions and everyday problems with our environment and global community from a geological perspective. Topics to be covered will include; Earth Materials and Structure, Human Population Growth, Environmental Hazards such as Floods and Earthquakes, Pollution of the Environment, Waste Disposal, Natural Resources, and Energy Sources and their exploitation

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE: (the instructor may add and/or delete material as time permits.)

I. Foundations of Geology
II. Internal Processes
III. Surface Processes
IV. Resources
V. Waste Disposal

EXPECTED LEARNER OUTCOMES:
A. The learner will develop a greater self-awareness of your personal role regarding environmental issues.
B. The learner will increase their awareness of environmental issues and how they affect society.
C. The learner will develop skills and insight into critical thinking and situational awareness of their surrounding environment.
D. The Learner will gain an understanding of the Internal processes that operate within the earth.
E. The Learner will develop an appreciation of the Surface process that shape the earth.
F. The Learner will define what a resource is and determine it economic, industrial and environmental significance.
G. The Learner will develop a knowledge of various waste disposal methods and their environmental impacts.
H. The Learner will gain an understanding the interactions between humans and these geological processes.

COURSE COMPETENCIES: (Based upon material covered, which is determined by the instructor taking into account time, opportunity and current events in biology) Develop a greater self-awareness of your personal role regarding environmental issues. Gain an understanding the interactions between humans and these geological processes.

1. The learner will describe the process by which the solar system is believed to have formed.
2. The Learner will explain how the early earth differed from the earth that they know today.
3. The Learner will describe how the earth’s atmosphere and oceans were formed.
4. The Learner will define the terms: ion, isotope, compound, mineral and rock.
5. The Learner will determine what two properties uniquely defines a particular mineral.
6. The Learner will explain the causes of strain in rocks.
7. The Learner will understand the relationship between plate tectonics and continental drift and seafloor spreading.

Increase awareness of environmental issues and how they affect society.
8. The Learner will explain the concept of fault creep and its relationship to the occurrence of earthquakes.
9. The Learner will name two kinds of seismic body waves and explain how they differ.
10. The Learner will define pyroclastics and identify the type of volcanic structure that pyroclastics may build.
11. The Learner will explain the nature of a phreatic eruption.
12. The Learner will what factors control stream load.
13. The Learner will describe the ways in which urbanization may increase local flood hazards.
14. The Learner will outline potential problems with flood-control dams.

Develop skills and insight into critical thinking and situational awareness of the surrounding environment.
15. The Learner will Name ways in which the relative elevation of land and sea may be altered.
16. The Learner will describe the current trend in global sea level.
17. The Learner will explain why landslides occur.
18. The Learner will explain the distinctions among falls, slides and flows.
19. The Learner will discuss ways in which glaciers might be manipulated for use as a source of water.
20. The Learner will explain how sunlight falling on the earth’s surface is a factor in wind circulation.
21. The Learner will describe the importance of porosity and permeability to groundwater availability.

Gain an understanding of the Internal processes that operate within the earth.
22. The Learner will explain how sinkholes form.
23. The Learner will explain three parameters used to describe groundwater quality.
24. The Learner will describe chemical weathering.
25. The Learner will evaluate the pros and con of irrigation.
26. The Learner will explain how economics and concentration factor relate to the definition of an ore.
27. The Learner will describe why tailings from mineral processing a potential environmental concern.
28. The Learner will describe how oil and gas deposits form and mature.
*Develop an appreciation of the Surface process that shape the earth.*
29. The Learner will explain enhanced recovery and why it is of interest.
30. The Learner will describe what methane hydrates are and where they are formed.
31. The Learner will outline air-pollution problems that are associated with fossil fuel usage.
32. The Learner will describe nuclear fusion and evaluate its advantages.
33. The Learner will determine what areas solar energy might potentially make the greatest contributions toward our energy needs.
34. The Learner will explain the nature of geothermal energy and how it is extracted.
*Define what a resource is and determine it economic, industrial and environmental significance.*
35. The Learner will describe two kinds of activities that generate the most solid wastes.
36. The Learner will evaluate the advantages and disadvantages relating to the disposal of high-level radioactive wastes in subduction zones, sediments on the deep-sea floor, tuff and bedded salt.
37. The Learner will explain how human activities most commonly alter the cycles of naturally occurring elements.
38. The Learner will define BOD and explain how it relates to the oxygen sag curve.
39. The Learner will cite at least three possible sources of the nutrients that contribute to eutrophication of water.
40. The learner will describe the principal sources and sinks for atmospheric carbon dioxide.
41. The learner will list the sources of various nitrogen oxides that contribute to photochemical smog.
*Develop a knowledge of various waste disposal methods and their environmental impacts.*
42. The learner will discuss what economic zones are.
43. The Learner will summarize the kinds of information included in an environmental impact statement.

**ASSESSMENT OF LEARNER OUTCOMES:**
Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

**SPECIAL NOTES:**
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

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