Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Communication skills
Objectives met by this course include communication skills. Students will have gained communication skills through writing reports of their team activities analyzing the environmental geological threats in our area.

Relevant Associations:
Standard Associations
New Core Component Areas
2 Life & Physical Science (L & PS)
New Core Objectives
2 Communication (COM)

General Education/Core Curriculum Associations
3 Communication: Students will develop written and oral presentations that are clear, precise, organized, efficient and appropriately adapted to audience and purpose.

Strategic Plan Associations
Lamar University
14.1 To offer undergraduate and selected graduate educational experiences of excellence, both curricular and co-curricular, which engage students with faculty and staff to meet their diverse needs.
(Recruitment, retention, financial support, distance education, curriculum, academic excellence, student engagement, communication, and student life)

Related Measures
M 1: Written exams
Students critical thinking skills will be assessed via 3 100 pt. written exams and a 100 pt. comprehensive final.

Critical thinking example questions:
1. (Based on current weather map) Residents of which of these states should be concerned about flash flooding occurring this afternoon?

2. Which of these electromagnetic wave-lengths is most important in warming our atmosphere?
   a. UV   b. Visible light   c. Infra-red   d. X-rays   e. none of these

3. On August 22, 2/3 of summer had passed with one month left until Fall, the sun reached a noon-time altitude of 90° (straight overhead) at approximately what latitude?
   a. 23.5°N   b. 16°N   c. 8°N   d. 0° (Equator)   e. 8°S

4. Which latitude did not get any direct sunlight between March 21 and September 21?
   a. 90°N (North Pole)   b. 90°S (South Pole)   c. 66.5°N (Arctic Circle)   d. 23.5°N (Tropic of Cancer)   e. 0° (Equator)

5. Most UV wave-length solar energy absorbed by the atmosphere is later lost after it has been converted to ______ wave-lengths.
   a. infra-red   b. shorter   c. ultraviolet   d. radio (in the ionosphere)   e. micro

Source of Evidence: Academic direct measure of learning - other
Target: The targets for critical thinking skills are 65%.

M 2: Field trip reports
Student teams will conduct activities and record results on field trips. They will generate written reports about their activities and results and include visual aids such as maps, graphs and charts. Assessment of their teamwork and reports will be based on the quality of the reports and visual aids. Their teamwork will be assessed using the teamwork rubric.

Source of Evidence: Written assignment(s), usually scored by a rubric
Connected Document
Written and visual rubric GEOL 1390
Target:
The targets for teamwork and written & visual communication are 65%.

M 3: Quantitative exams
Empirical & quantitative skills will be tested on three 100 pt. exams and a comprehensive 100 pt. final exam.

Empirical & quantitative skills example questions:

1. If the ground level air temperature in Beaumont is 20°C, the probable temperature at an altitude of 3 km is ___°C.
   a. 39.5       b. 15       c. 13.5       d. 6.5       e. 0.5

2. If the ground level air temperature high at sea level in Seattle, WA today is 68°F, at what about what elevation would you expect to find the freezing line (snow line) on Mt. Ranier? a. 6000’ b. 7000’ c. 8000’ d. 9000’ e. 10,000’

3. A 1 gm cube of ice at 0°C requires ____ calories for it to melt into liquid water at 0°C.
   a. 1              b. 80              c. 100              d. 540              e. 720

4. About ____ calories are released when 10 gm of cloud droplets condense in a cloud.
   a. 10              b. 800              c. 5400              d. 6000              e. 7200

5. A gram of 25 oC water must lose ____ calories to cool down to 20°C.
   a. 5              b. 10              c. 540              d. 600              e. 720

Source of Evidence: Academic direct measure of learning - other

Target:
The target for empirical and quantitative skills is 65%.

SLO 2: Critical thinking
Critical thinking will be enhanced through addressing the complex processes related to environmental geology.

Relevant Associations:

Standard Associations

New Core Component Areas
2. Life & Physical Science (L & PS)

New Core Objectives
1. Critical Thinking (CT)

General Education/Core Curriculum Associations
1. Critical Thinking: Students will apply critical thinking appropriately to identify, analyze and resolve complex issues.

Strategic Plan Associations
Lamar University
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Related Measures

M 4: Teamwork
Teams will record conduct activities and record observations on field trips. They will generate group reports based on these activities & findings. Teamwork will be assessed by the teamwork rubric.

Source of Evidence: Academic direct measure of learning - other

Connected Document
Teamwork rubric GEOL 1390

Target:
Target is for 65% of students to score 2 or better on the teamwork rubric.

SLO 3: Empirical & quantitative skills
Empirical & quantitative skills will be enhanced using application of these skills to the chemical and physical processes related to environmental geology.

Relevant Associations:

Standard Associations

New Core Component Areas
2. Life & Physical Science (L & PS)

New Core Objectives
3. Empirical & Quantitative Skills (EQS)

General Education/Core Curriculum Associations
2. Quantitative Thinking: Students will demonstrate mastery of quantitative reasoning and algorithms used to address applied problems

Strategic Plan Associations
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**SLO 4: Teamwork**

Teamwork skills will be enhanced by creating teams which will conduct activities in the field making and recording observations about environmental geologic processes. After the field activities are concluded, teams will make conclusions and generate written reports about their observations and conclusions.

**Relevant Associations:**

**Standard Associations**

*New Core Component Areas*

2. Life & Physical Science (L & PS)

*New Core Objectives*

4. Teamwork (TW)

**General Education/Core Curriculum Associations**

4. Teamwork: includes the ability to collaborate effectively, consider different points of view, and work with others to support a shared purpose or goals.

**Strategic Plan Associations**

Lamar University

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