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

**SLO 1: Critical Thinking Skills**
In lectures and lab exercises, students gain an understanding of critically evaluating multiple working hypotheses regarding a problem, or evaluate theories that have been postulated for the Earth.

**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
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: GEOL 1404 Outcome 1 Lecture Exam**
Lecture Exam will be given near end of semester with 5 questions covering critical thinking skills. This exam will be given in each lecture section of GEOL 1404 taught on campus. Class average of each section will be averaged to give a final score. Example questions are attached.
Source of Evidence: Academic direct measure of learning - other

**Connected Document**
GEOL 1404 Outcome 1 Critical Thinking Lecture Exam

**Target:**
Target is 65% or higher for all sections averaged together.

**M 2: GEOL 1404 Outcome 1 Lab Quizzes**
Lab Quizzes on fossil identification will be given near middle of semester that assess the students’ critical thinking skills. These lab quizzes will be given in each lab section taught on campus. Please see link to example quizzes.
Source of Evidence: Academic direct measure of learning - other

**Connected Document**
GEOL 1404 Outcome 1 Critical Thinking Lab Quizzes

**Target:**
Target is 65% or higher for all sections averaged together.

**SLO 2: Empirical and Quantitative Skills**
Students use empirical observations in lecture and lab to determine the type of fossil or other feature that facilitates understanding Earth history and processes. Students also use calculations in their investigations.

**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**
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 3: GEOL 1404 Outcome 2 Lecture Exam**
Lecture Exam will be given near end of semester with 5 questions covering empirical and quantitative skills. This
exam will be given in each lecture section of GEOL 1404 taught on campus. Class average of each section will be averaged to give a final score. Example questions are attached.

Source of Evidence: Academic direct measure of learning - other

**Connected Document**

**GEOL 1404 Outcome 2 Empirical and Quantitative Skills Lecture Exam**

**Target:**
Target is 65% or higher for all sections averaged together.

**M 4: GEOL 1404 Outcome 2 Lab Exercises**
Selected Lab Exercises covering empirical skills will be collected and graded. These exercises will be graded in each lab section of GEOL 1404 taught on campus. Class average of each section will be averaged to give a final score. Example lab exercises are attached.

Source of Evidence: Written assignment(s), usually scored by a rubric

**Connected Document**

**GEOL 1404 Outcome 2 Empirical and Quantitative Skills Lab Exercises**

**Target:**
Target is 65% or higher for all sections averaged together.

**SLO 3: Communications Skills**
By working on exercises in lab, students learn to communicate with one another and the instructor orally, visually, and through writing.

**Relevant Associations:**

**Standard Associations**

- New Core Component Areas
- Life & Physical Science (L & PS)
- New Core Objectives
- Communication (COM)

**General Education/Core Curriculum Associations**

- 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 5: GEOL 1404 Outcome 3 Rubric**
Selected exercises in lab will be assessed for written and visual communication skills using the attached rubric. Each lab section on the Lamar campus will be assessed and the average scores for each section will be averaged together to yield a total score.

Source of Evidence: Written assignment(s), usually scored by a rubric

**Connected Document**

**GEOL 1404 Outcome 3 Written and Visual Communication Skills Rubric**

**Target:**
Target is an average of 2.0 or greater for all lab sections assessed.

**SLO 4: Teamwork**
Students work in teams in lab to make observations and reach conclusions.

**Relevant Associations:**

**Standard Associations**

- New Core Component Areas
- Life & Physical Science (L & PS)
- New Core Objectives
- Teamwork (TW)

**General Education/Core Curriculum Associations**

- 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
- 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 6: GEOL 1404 Outcome 4 Rubric**
Student teams will be assessed for teamwork skills during selected labs by lab instructors using the attached rubric. Each lab section on the Lamar campus will be assessed and the average scores for each section will be averaged together to yield a total score.

Source of Evidence: Academic direct measure of learning - other
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<td>GEOL 1404 Outcome 4 Teamwork Skills Rubric</td>
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**Target:**
Target is an average of 2.0 or greater for all lab sections assessed.