**SLO 1: Critical Thinking Skills**

Students will learn: (1) critical thinking skills through use of the scientific method to recognize the differences between these approaches and other methods of inquiry regarding understanding the universe as revealed through space exploration.

**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: Measure for O1**
  An objectively scored summary pop-quiz in lecture for O1 that is based on previous exam questions. Note that questions on each lecture test that pertain to the stated outcome will be used for generating the lecture pop-quiz. The percentage of students from all the sections that score correctly on each objective question used to assess a given outcome will be averaged to determine the score for that outcome. These questions will be determined near the end of the semester since they will be extracted from previous exams.
  
  Source of Evidence: Academic direct measure of learning - other

  **Target:**
  Using the pop quiz as a measure, we expect a target of 65% average for the exam.

**SLO 2: Empirical and Quantitative Skills**

Students will learn: (2) empirical and quantitative skills through use of known physical laws, the equations describing the laws, scientific notation and units of measurement.

**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 2: Measure for O2**
  An objectively scored summary pop-quiz in lecture for O2 that is based on previous exam questions. Note that questions on each lecture test that pertain to the stated outcome will be used for generating the lecture pop-quiz. The percentage of students from all the sections that score correctly on each objective question used to assess a given outcome will be averaged to determine the score for that outcome. These questions will be determined near the end of the semester since they will be extracted from previous exams.
  
  Source of Evidence: Academic direct measure of learning - other

  **Target:**
  Using the pop quiz as a measure we expect a target of 65% or better for the exam.

**SLO 3: Communication Skills**
Students will learn: (3) oral, written, and visual communication, through lab experiences that require all of these forms of communication.

**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 3: Measure for O3**

An objectively scored performance for O3 that is based on laboratory written assignments. Students are required to write their results in each of 10 labs. At the end of selected labs the instructor will assess and record the performance for the class based on the average individual performances, and the attached rubric for assessing writing skills. The average performance calculated from the labs will be used to assess outcome 3.

Source of Evidence: Performance (recital, exhibit, science project)

**Target:**

Using the attached rubric for writing communication skills, we expect that 60% of the students will do "good" or better.

**SLO 4: Teamwork Skills**

Students will learn: (4) teamwork through laboratory experiences that require team formation and teamwork.

**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 4: Measure for O4**

An objectively scored summary for O4 that is based on previous laboratory performance as teams. Six out of the present 10 laboratories require team formation. At the end of each of these laboratories the instructor will establish from the average of the performance of each team, and the average performance of the lab section, using the attached rubric for teamwork skills. The lab sections will be averaged to determine the performance for O4.

Source of Evidence: Performance (recital, exhibit, science project)

**Target:**

Using the attached rubric for teamwork skills, we expect that 60% of the teams will be "good" or better.