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

SLO 1: Critical Thinking
Students will demonstrate critical thinking skills by applying fundamental physical principles to real world examples in quizzes.

Relevant Associations:
- Standard Associations
  - New Core Component Areas
    - 2 Life & Physical Science (L & PS)
  - New Core Objectives
    - 1 Critical Thinking (CT)

Related Measures
- M 1: Critical Thinking Measure
  Quiz problem for Critical thinking:
  1) In 1909, Robert Millikan was the first to find the charge of an electron in his now-famous oil-drop experiment. Negatively-charged oil drops were sprayed into a uniform electric field which was adjusted until the upward force equaled the downward force due to gravity. If a drop of mass $1.65 \times 10^{-14}$ kg remains stationary in an electric field of $2.52 \times 10^5$ N/C, what is the charge on this drop? A) $3.2 \times 10^{-19}$ C B) $6.4 \times 10^{-19}$ C C) $9.6 \times 10^{-19}$ C D) $12.8 \times 10^{-19}$ C E) $16.0 \times 10^{-19}$ C
  2) How many electrons are on the oil drop in the preceding problem? A) 2 B) 4 C) 6 D) 8 E) 10

It is not clear how you will use the rubric to review responses to a set of multiple choice items. (Are you proposing two separate measures? If you will be using the rubric, you need to upload the specific rubric to the WEAVE document management area instead of citing a web page that contains multiple rubrics.

Rubric - We will use the following rubric from AACU to assess critical thinking in this quiz:

Critical Thinking VALUE Rubric for more information, please contact value@aacu.org

Source of Evidence: Academic direct measure of learning - other

Target:
We expect students to obtain at least 75% of the points obtainable from the Rubric.

SLO 2: Quantitative Analysis
Students will demonstrate quantitative thinking skills by applying basic mathematical principles to the solution of real world examples in a quiz problem. Quiz problem: 1) In 1909, Robert Millikan was the first to find the charge of an electron in his now-famous oil-drop experiment. Negatively-charged oil drops were sprayed into a uniform electric field which was adjusted until the upward force equaled the downward force due to gravity. If a drop of mass $1.65 \times 10^{-14}$ kg remains stationary in an electric field of $2.52 \times 10^5$ N/C, what is the charge on this drop? A) $3.2 \times 10^{-19}$ C B) $6.4 \times 10^{-19}$ C C) $9.6 \times 10^{-19}$ C D) $12.8 \times 10^{-19}$ C E) $16.0 \times 10^{-19}$ C 2) How many electrons are on the oil drop in the preceding problem? A) 2 B) 4 C) 6 D) 8 E) 10

Rubric - we will use the following rubric from AACU to assess Quantitative skills:

Quantitative Literacy VALUE Rubric for more information, please contact value@aacu.org

Source of Evidence: Written assignment(s), usually scored by a rubric
Target:
We expect students to obtain at least 75% of the points obtainable from the Rubric.

SLO 3: Teamwork
Students will demonstrate the ability to work with others in a common effort to achieve an outcome through cooperation and teamwork in a group exercise.

Relevant Associations:
Standard Associations
- New Core Component Areas
  - 2. Life & Physical Science (L & PS)
- New Core Objectives
  - 4. Teamwork (TW)

Related Measures
M 3: Teamwork Measure
Teamwork Measure.

A Project exercise will be given to the students as part of their normal grade. The project will require both teamwork, as well as communication through a written report.

The Project report will then be assessed for each student with an AACU rubrics for both Teamwork and Communication...

Source of Evidence: Project, either individual or group

Target:
We expect students to obtain at least 75% of the points obtainable from the Rubric.

SLO 4: Communication
Students will demonstrate communication skills by reporting the process and results of group exercise in a written laboratory report.

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

Related Measures
M 4: Communication Measure
Communication Measure.

A Project exercise will be given to the students as part of their normal grade. The project will require both teamwork, as well as communication through a written report. The Project report will then be assessed for each student with an AACU rubrics for both Teamwork and Communication.

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

Target:
We expect students to obtain at least 75% of the points obtainable from the Rubric.