

## Learning Outcomes Assessment Critical Thinking–Aggregate Results

---

**Assessment Type:** GEC

**Year/Term:** AY18

**Course:** PHYS 201

**Learning Outcome:** Critical Thinking

**Assessment Method/Tool:** Common Rubric-EPCC

**Measurement Scale:** 3-1

**Sample Size:** 45

---

	Proficient (# of students   %)		Adequate (# of students   %)		Developing (# of students   %)	
<b>Problem 1</b>	39	87%	3	7%	3	7%
<b>Problem 3</b>	38	84%	4	9%	3	7%
<b>Problem 5</b>	23	51.4%	18	40%	4	9%
<b>Median % (based on 45 student sample size)</b>		84%		9%		7%

---

**Benchmark:** **85%** Institutional benchmark goal for median percentage of students to meet “Proficient” or “Adequate” levels in the GEC

**Median % Achieving Benchmark:** **93%** Actual percentage of students meeting “Adequate” or “Proficient” levels

## **Closing the Loop:**

### Overview

Student data is taken from an Online Management System known as “Sapling Learning.” Three problems on Assignment 5b were assessed which had a total of 10 problems. The three problems were chosen to represent “Critical Thinking” because in addition to a numerical answer, they required qualitative answers which necessarily require critical thinking.

### Summary

93% (mean) of the students were Proficient or Adequate, exceeding the GEC requirement of 85%. Correct responses were considered “Proficient.” Incorrect responses were considered “Adequate” as the students average 3.1 attempts per problem indicating an effort and interest in the problem solution. Those 7% who did not attempt the problems were considered “Developing.” Because of the nature of the assignment, individual submetrics were not assessable: only “Average” assessments are reported here.

### Accounting for Results

#### Strengths

The students generally like the straightforward nature of the online homework system.

#### Challenges

The online homework system does take some time to learn. However, this was their 6th assignment, and there were “practice” assignments to acclimate the students to the software. Homework is worth 20% of their total grade. Some students might have decided to not do the homework just for time reasons. However, those who did not attempt the homework problems did pay for the privilege or they would not have been noted by the software.

## **Action Plan:**

Critical Thinking is an integral part of the physics curriculum. It would be impossible to teach the subject without heavy doses of critical thinking. That being said, only 3 of the 10 problems required a non-numerical answer. In the future, it would be better to have an assignment which had more such problems in order to improve the fidelity of the results. It may also be possible to incorporate a physics laboratory assignment which would allow assessment of the student’s abilities to “Identify and Explain Issues”, “Recognize Contexts and Assumptions”, “Acknowledge Multiple Perspectives,” and “Evaluate Evidence to Reach Conclusions.”