Physics Assessment, SLO 1 (2024-2025)

First-Year Pre-Test (All)

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Score	1.00	14.00	4.65	2.99	8.93	630	2931.00

First-Year Post-Test (All)

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Score	1.00	14.00	6.08	3.50	12.22	276	1677.00

Senior Year, Post-Test

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Score	5.00	13.00	10.13	2.52	6.36	8	81.00

Instructional Efficacy

Instruction efficacy is measured using independent-groups Cohen's *d* effect size:

- Small, *d* = 0.2 - 0.49
- Medium, *d* = 0.5 - 0.79
- Large, *d* = 0.8+

First-Year Course Effect Size: ***d = 0.45 (low-to-medium)***

The introductory course demonstrated a normalized gain of *g* = 0.15 on the 14-item Half-FCI, which is below the average gain reported for traditional lecture courses (~0.23) and substantially below gains typical of interactive-engagement courses (~0.48) in the large multi-institutional study by Hake (1998). The post-instruction mean of 6.08/14 (≈43%) is somewhat lower than commonly reported post-test averages for introductory physics courses nationally, which often fall in the 50–65% range for traditional implementations and higher for interactive formats.

Program Effect Size: ***d = 1.83 (very large)***

Graduating seniors scored a normalized contrast of *g* = 0.59 relative to entering students on the 14-item Half-FCI, indicating substantial cumulative conceptual development across the physics major. Their mean score of 10.13/14 (≈72%) is well above typical post-instruction averages reported for introductory physics courses and falls within the range commonly observed for advanced undergraduate physics majors at many institutions.