Physics Assessment, SLO 3 (2024-2025)

Student Learning Outcome 3:

After completing a UNO physics degree, students will be able to identify, develop, and apply experimental and/or computational approaches to answer research questions using the investigative practices of physicists.

CDPA Results

Matched CDPA data (N = 6) show:

- Pre mean: 3.50/10
- Post mean: 7.33/10
- Mean gain: +3.83 points
- Normalized gain: g ≈ 0.59
- Paired Cohen's d: ≈ 1.65

These results indicate substantial improvement in students' ability to reason about measurement, uncertainty, and data analysis. Post-instruction performance (73% average) suggests that graduating students demonstrate strong competency in core experimental reasoning skills aligned with SLO 3.

Research and Internship Participation

Graduation Survey data indicate that physics majors engage in authentic research experiences at high rates relative to peer departments:

- 22% five-year average participation in undergraduate research, leading all STEM disciplines in the College of Arts & Sciences.
- Nearly one-third (≈33%) of 2023 graduates reported research participation.
- 12% of 2023 graduates reported completing paid internships.

These findings provide direct evidence that a substantial proportion of students apply investigative practices in authentic research or industry settings prior to graduation.

Overall Assessment

Evidence from both performance-based measures (CDPA) and authentic engagement metrics indicates that physics majors develop and apply experimental and computational approaches consistent with the investigative practices of physicists.

SLO 3 is being met.