

2021-2022 Assessment Cycle

Assessment Plan

Mission Statement

The mission of the Physics and Astronomy Department is to engage our community in an impassioned and continued search for intellectual growth in the fields of physics, astronomy, engineering, and geology. The department will accomplish this mission by: offering general education courses to all students; providing a comprehensive and personalized foundation for majors, which will prepare them for a career in their chosen field; performing research and scholarship which broadens the horizons of knowledge and informs our teaching, and; providing public access to the planetarium and observatory and conducting educational programs in physics, astronomy, engineering, and geology for the intellectual enrichment of the citizens of the state of Kansas.

Measures

BA - Physics Outcome Set

PSLO 1

Outcome: Solve problems requiring a conceptual and analytical knowledge of the major areas of physics.

▼ **Measure:** Course-Embedded Assignments
Program level Direct - Student Artifact

Details/Description:	Student work in specific courses will be evaluated using department-wide rubric for this PSLO.
Acceptable Target:	70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

 PSLO 1 Assignment rubric (Adobe Acrobat Document)

▼ **Measure:** Graduate Survey
Program level Indirect - Survey

Details/Description: Specific questions on survey of recent graduates.
Acceptable Target: Average value of 4 or greater (out of 5-point scale) on relevant survey question (#7).
(Also subjectively evaluated using written feedback on survey questions.)

Supporting Attachments:

 Graduate Survey (Adobe Acrobat Document)

PSLO 2

Outcome: Construct and solve mathematical models of physical phenomena.

▼ **Measure:** Course Grade
Program level Direct - Student Artifact

Details/Description: Course grade in PS365 Intro to Theoretical Physics (course specifically designed for this outcome).
Acceptable Target: 70% of students achieve C or better

▼ **Measure:** Course-Embedded Assignments

Program level Direct - Student Artifact

Details/Description: Student work in specific courses will be evaluated using department-wide rubric for this PSLO.

Acceptable Target: 70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

 PSLO 2 Assignment rubric (Adobe Acrobat Document)

▼ **Measure:** Graduation Survey
Program level Indirect - Survey

Details/Description: Specific questions on survey of recent graduates.

Acceptable Target: Average value of 4 or greater (out of 5-point scale) on relevant survey question (#9).
(Also subjectively evaluated using written feedback on survey questions.)

Supporting Attachments:

 Graduate Survey (Adobe Acrobat Document)

PSLO 3

Outcome: Design and conduct experiments consistent with accepted disciplinary practices.

▼ **Measure:** Capstone Project Evaluation
Program level Direct - Student Artifact

Details/Description:

Students who complete the B.S. in Physics or B.S. in Computational Physics at Washburn must make progress on a research project while taking either PS 360 or PS 368 to receive their degree. (This requirement does not apply to students in the Engineering Transfer Program, who take most of their upper-division courses at another institution.)

Students are evaluated using two similar rubrics - one for the instructor (project mentor) and one for an independent faculty member who evaluates project based on student presentation.

Acceptable Target:

70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

[Capstone Project Rubric - Instructor \(Adobe Acrobat Document\)](#)

[Capstone Project Rubric - Other faculty \(Adobe Acrobat Document\)](#)

▼ **Measure:** Course-Embedded Assignments

Program level Direct - Student Artifact

Details/Description:

Student work in specific courses will be evaluated using department-wide rubric for this PSLO.

Acceptable Target:

70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

[PSLO 3 Assignment rubric \(Adobe Acrobat Document\)](#)

▼ **Measure:** Graduate Survey

Program level Indirect - Survey

Details/Description: Specific questions on survey of recent graduates.

Acceptable Target: Average value of 4 or greater (out of 5-point scale) on relevant survey question (#11).
(Also subjectively evaluated using written feedback on survey questions.)

Supporting Attachments:

 Graduate Survey (Adobe Acrobat Document)

PSLO 4

Outcome: Recognize how observation, experiment, and theory are complementary components the research process resulting in the expansion of knowledge.

▼ **Measure:** Capstone Project Evaluation
Program level Direct - Student Artifact

Details/Description: Students who complete the B.S. in Physics or B.S. in Computational Physics at Washburn must make progress on a research project while taking either PS 360 or PS 368 to receive their degree. (This requirement does not apply to students in the Engineering Transfer Program, who take most of their upper-division courses at another institution.)

Students are evaluated using two similar rubrics - one for the instructor (project mentor) and one for an independent faculty member who evaluates project based on student presentation.

Acceptable Target: 70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

 Capstone Project Rubric - Instructor (Adobe Acrobat Document)

 Capstone Project Rubric - Other faculty (Adobe Acrobat Document)

▼ **Measure:** Graduate Survey
Program level Indirect - Survey

Details/Description:	Specific questions on survey of recent graduates.
Acceptable Target:	Average value of 4 or greater (out of 5-point scale) on relevant survey question (#13). (Also subjectively evaluated using written feedback on survey questions.)

Supporting Attachments:

 Graduate Survey (Adobe Acrobat Document)

PSLO 5

Outcome: Communicate scientific information in oral, written, and graphic formats.

▼ **Measure:** Capstone Presentation
Program level Direct - Student Artifact

Details/Description:	Students who complete the B.S. in Physics or B.S. in Computational Physics at Washburn must make a presentation about their research project while taking either PS 360 or PS 368 to receive their degree. (This requirement does not apply to students in the Engineering Transfer Program, who take most of their upper-division courses at another institution.)
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Acceptable Target: 70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

 Capstone Presentation Rubric (Adobe Acrobat Document)

▼ **Measure:** Course-Embedded Assignments
Program level Direct - Student Artifact

Details/Description: Presentations, both written and oral, are required as assignments in certain courses.
We use the Capstone Presentation rubric here; note the rubric language refers more to oral presentations but can be used for either oral or written.

Acceptable Target: 70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

 Capstone Presentation Rubric (Adobe Acrobat Document)

▼ **Measure:** Graduate Survey
Program level Indirect - Survey

Details/Description: Specific questions on survey of recent graduates.

Acceptable Target: Average value of 4 or greater (out of 5-point scale) on relevant survey question (#15).
(Also subjectively evaluated using written feedback on survey questions.)

Supporting Attachments:

 Graduate Survey (Adobe Acrobat Document)

PSLO 6

Outcome: Use computational methods to simulate, analyze, and present data from physical systems.

▼ **Measure:** Course Grade
Program level Direct - Student Artifact

Details/Description: Course grade in PS366 Computational Physics (course specifically designed for this outcome).

Acceptable Target: 70% of students achieve C or better

▼ **Measure:** Course-Embedded Assignments
Program level Direct - Student Artifact

Details/Description: Student work in specific courses will be evaluated using department-wide rubric for this PSLO.

Acceptable Target: 70% of students will score an average of 3 or higher on the rubric.

Supporting Attachments:

 PSLO 6 Assignment rubric (Adobe Acrobat Document)

▼ **Measure:** Graduate Survey
Program level Indirect - Survey

Details/Description: Specific questions on survey of recent graduates.

Acceptable Target:

Average value of 4 or greater (out of 5-point scale) on relevant survey question (#17).
(Also subjectively evaluated using written feedback on survey questions.)

Supporting Attachments:

 Graduate Survey (Adobe Acrobat Document)

Analysis and Reporting Calendar

Data are collected and analyzed for each PSLO (1-5) when the relevant course is taught in a given semester.

Capstone project and presentation assessment is done as needed when students reach this point.

Graduate survey is shared with new graduates each year and results analyzed in that assessment cycle.

Stakeholder Involvement

Faculty will periodically review the SLOs and ensure they are consistent with approved national standards with the goal that students are well-prepared for graduate school or work. Faculty will contribute appropriate assessment results and will participate in department meeting focusing on assessment.

Recently graduated students will be asked to complete a survey about their experience, with both general questions and questions focused specifically on the PSLOs.

Program Assessment Plan Review Cycle

The Program Assessment Plan is reviewed annually and updated as needed.

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