Department of Physics, CSCI
CALIFORNIA STATE UNIVERSITY EAST BAY

ASSESSMENT PLAN: Bachelor of Arts (BA)

Date Updated: 14 Aug 2025

PROGRAM MISSION

Institutional Learning Outcomes

PROGRAM LEARNING OUTCOMES (PLOs)

Students graduating with a BA in Physics will be able to:

PLO 1	Describe the fundamental principles of physics and be able to apply these core ideas to analyze physical processes
PLO 2	Use quantitative reasoning and critical thinking to solve complex problems, both theoretical and experimental in nature
PLO 3	Learn new technical subjects and skills
PLO 4	Construct, assess and troubleshoot experiments, quantitatively analyze the results using appropriate statistical procedures and tests of systematic errors, and draw meaningful conclusions
PLO 5	Effectively explain scientific ideas, both theoretical and experimental, to diverse audiences through written and oral presentations, both formal and informal
PLO 6	Work professionally, effectively, and inclusively as a member of diverse collaborations to solve problems

Year 1: 2025-2026

1. *Which PLO(s) to assess*	PLO 2
2. *Is it aligned to an ILO?*	Yes
3. *If yes, list ILO.*	Thinking and Reasoning
4. *Course name and number*	PHYS 330 Analytic Mechanics
5. *SLO from course*	Students will be able to develop models and apply advanced mathematical techniques, such as vector calculus differential equations, and Fourier series, to solve physics problems. Students will be able to identify an appropriate coordinate system, and analyze physics problems in several different

	coordinate systems. Students will be able to explain the behaviors of physical systems that are undergoing oscillations, under the influence of a central force, in a non-inertial reference frame, or undergoing rotation.
6. *Assessment activity*	Specific problem set solved by students (same set each year)
7. *Assessment Instrument*	Rubric used to score problems
8. *How data will be reported*	Quantitative
9. *Responsible person(s)*	Dr. Kathryn Grimm (Department assessment coordinator)
10. *Time (which semester(s))*	Fall 2025
11. *Ways of closing the loop*	Qualitative results are included in assessment report for annual department report, comparing scores according to rubric.

Year 2: 2026-2027

1. *Which PLO(s) to assess*	PLO 5
2. *Is it aligned to an ILO?*	Yes
3. *If yes, list ILO.*	ILO 2: Communication
4. *Course name and number*	Physics 381: Advanced Lab II
5. *SLO from course*	Communication: students will be able to (a) effectively argue in favor of their conclusions from their experimentation, calculations, and analysis using appropriate methods of discourse adopted by the professional physics community; (b) keep a clear and comprehensive record of their experimental work in a laboratory notebook; (c) present a well-organized, quantitative argument in the form of a written report; (d) write sentences that are well-constructed; (e) use standard writing conventions for grammar, punctuation, and spelling.
6. *Assessment activity*	Written lab report
7. *Assessment Instrument*	Department accepted standard rubric for grading written assignment
8. *How data will be reported*	Qualitative and quantitative
9. *Responsible person(s)*	Dr. Kathryn Grimm (Department assessment coordinator)
10. *Time (which semester(s))*	Spring 2027
11. *Ways of closing the loop*	This data will be reported within the assessment portion of the Physics Department annual report and compared to scores from this same course from previous years.

Year 3: 2027-2028

1. *Which PLO(s) to assess*	PLO 3
2. *Is it aligned to an ILO?*	Yes
3. *If yes, list ILO.*	Specialized Discipline, particularly: Demonstrating fluency in the use of tools, technologies and methods in the field; assembling, arranging and formulating ideas, concepts,
4. *Course name and number*	Phys 350: Quantum Mechanics I
5. *SLO from course*	Students will be able to explain the connection between experimental measurements on quantum systems and the mathematical representations (operators, state vectors, etc.) used in quantum theory in terms of the postulates of quantum mechanics.
6. *Assessment activity*	Rubric used to score problems
7. *Assessment Instrument*	Department accepted standard rubric
8. *How data will be reported*	Quantitative.
9. *Responsible person(s)*	Dr. Kathryn Grimm (Department assessment coordinator)

10. Time (which semester(s))	Fall 2027
11. Ways of closing the loop	This data will be reported within the assessment portion of the Physics Department annual report and compared to scores from this same course from previous years.

Year 4: 2028-2029

1. Which PLO(s) to assess	PLO 1
2. Is it aligned to an ILO?	Yes
3. If yes, list ILO.	Thinking and Reasoning
4. Course name and number	PHYS 340 Statistical Physics and Thermodynamics
5. SLO from course	Students will be able to apply the Laws of Thermodynamics to analyze the behavior of various macroscopic systems. Students will be able to use the partition function to calculate thermodynamic properties of various systems. Students will be able to apply the concept of the chemical potential to solve problems involving chemical reactions and phase transitions.
6. Assessment activity	Specific problem set solved by students (same set each year)
7. Assessment Instrument	Rubric used to score problems
8. How data will be reported	Qualitative
9. Responsible person(s)	Dr. Kathryn Grimm (Department assessment coordinator)
10. Time (which semester(s))	Fall 2028
11. Ways of closing the loop	Qualitative results are included in assessment report for annual department report, comparing scores according to rubric.

Year 5: 2029-2030

1. Which PLO(s) to assess	PLO 4
2. Is it aligned to an ILO?	Yes
3. If yes, list ILO.	Specialized Discipline, particularly: Demonstrating fluency in the use of tools, technologies and methods in the field
4. Course name and number	Physics 381: Advanced Lab II
5. SLO from course	Design, construct, and troubleshoot experimental equipment; use appropriate statistical analysis methods to quantitatively compare experimental results to the physical model.
6. Assessment activity	Use of quantitative assessment in Lab Report
7. Assessment Instrument	Rubric used to grade this portion of Lab Report (Results/Statistical Analysis)
8. How data will be reported	Quantitative
9. Responsible person(s)	Dr. Kathryn Grimm (Department assessment coordinator)
10. Time (which semester(s))	Spring 2030
11. Ways of closing the loop	This data will be reported within the assessment portion of the Physics Department annual report and compared to scores from this same course from previous years