

# Physics BA and BS

 Program-202

## Annual Assessment Plan

1

**2 PLO#1 - Foundational Content**

Graduates will demonstrate an understanding of the foundational theories, principles and concepts of physics.

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	75%	Annually
"Proficient"-level achievement or better across all "Development" course learning outcomes linked to the PLO.	80%	Annually
"Proficient"-level achievement or better across all "Mastery" course learning outcomes linked to the PLO.	85%	Annually
ETS Major Field Test Score	75%ile	3-year moving average assessed annually.



- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

Mastery: 50.9%

Intermediate: 16% more

Introductory: 12%

Below: 21%

Little low, but possibly due to bad linking...

ETS test: 3 year moving average 76% (4 students) target met. (All but one student in the last 5 years have been below 50%, so we're doing great!

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

None

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Due to low number of students, data for upper-level classes (Mastery-level) might not be reliable. Going forward, we will assess annually but aggregate results on rolling 3-year basis.
2. Link AEFIS to more specific assignments, targeted at the specific PLO.
3. Change level for tests to basic 65%, proficient 75%, Advanced 85%.

PROGRESS: still need to do

**3 PLO#2 - Engage with Scientific Literature**

Graduates will be able to retrieve, read and discuss primary scientific literature.

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Developing" course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Mastery" course learning outcomes linked to the PLO.	85%	Assessed annually

- 
- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

AEIFIS link not working, but...:

100% proficient in PHYS 494 discussion assignment

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

- o Find better way to teach and assess this.
- o Add SCIE 393 to AEFIS linking

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Due to low number of students, data might not be reliable. Going forward, we will assess annually but aggregate results from last 3 years.
  2. Link AEFIS to more specific assignments, targeted at the specific PLO.
- PROGRESS: still need to do

4 **PLO#3 - Scientific Communication**

Graduates will communicate physics concepts, processes and results effectively, both orally and in writing.

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Developing" course learning outcomes linked to the PLO.	80%	Assessed annually
"Proficient"-level achievement or better across all "Mastery" course learning outcomes linked to the PLO.	85%	Assessed annually

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

100% proficient according to AEFIS

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

None

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Due to low number of students, data might not be reliable. Going forward, we will assess annually but aggregate results from last 3 years.  
2. Link AEFIS to more specific assignments, targeted at the specific PLO.  
3. Add PLO to other courses, like PHYS251, 402, 421.  
PROGRESS: still need to do

5 **PLO#4 - Independent Problem Solving**

Graduates will apply content knowledge to independent problem solving in the physical sciences.

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.



There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Developing" course learning outcomes linked to the PLO.	80%	Assessed annually
"Proficient"-level achievement or better across all "Mastery" course learning outcomes linked to the PLO.	85%	Assessed annually

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.



Mastery 33%

Developing 33%

Introductory 4%

Below 29%

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

- o Need to check linking and levels. Some links don't seem to be working
- o Data probably skewed due to some students not doing the assignments

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Reduce "Proficiency" lower boundary to 70% for linked assignments.
  2. Due to low number of students, data might not be reliable. Going forward, we will assess annually but aggregate results from last 3 years.
  3. Link AEFIS to more specific assignments, targeted at the specific PLO.
  4. Need to link from 322/422/494
- PROGRESS: Still need to do

6 **PLO#5 - Art of Experimentation**

Graduates will engage with the art of experiment through experimental design, experimental performance, quantitative data analysis, and scientific reporting

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.



2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Developing" course learning outcomes linked to the PLO.	80%	Assessed annually
"Proficient"-level achievement or better across all "Mastery" course learning outcomes linked to the PLO.	85%	Assessed annually

4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

100% pass according to AEFIS – only from PHYS 251



- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

- o Need to link open-ended labs from PHYS211, and links 322/422/494
- o Remove PHYS 317

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Due to low number of students, data might not be reliable. Going forward, we will assess annually but aggregate results from last 3 years.
  2. Link AEFIS to more specific assignments, targeted at the specific PLO.
  3. Need to link from 322/422/494
- PROGRESS: Still need to do

7 **PLO#6 - Computational Skills**

Graduates will be able to use basic computational techniques for modeling physical systems, including those that don't have analytical answers.

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.



**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory"-level course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Developing"-level course learning outcomes linked to the PLO.	80%	Assesed annually
"Proficient"-level achievement or better across all "Introductory"-level course learning outcomes linked to the PLO.	85 %	Assessed annually

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

No data, but all students who completed the assignment in PHYS 402 were proficient (one did not complete the assignment)

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.



Implement Matlab and other computational assignments to PHYS 251, 317, 328, 402, 421, 425, and add links

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Due to low number of students, data might not be reliable. Going forward, we will assess annually but aggregate results from last 3 years.
2. Link AEFIS to more specific assignments, targeted at the specific PLO.
3. Need to link from 322/422/494

PROGRESS: still need to do

8 **PLO#7 - Vocation**

Graduates will identify and evaluate their vocation as it relates to their faith and career options in the physical sciences or related fields.

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.



Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Developing" course learning outcomes linked to the PLO.	80%	Assessed annually
"Proficient"-level achievement or better across all "Mastery" course learning outcomes linked to the PLO.	85%	Assessed annually

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

No data, but 100% proficient on assignment in PHYS 494

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.
- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Due to low number of students, data might not be reliable. Going forward, we will assess annually but aggregate results from last 3 years.
  2. Link AEFIS to more specific assignments, targeted at the specific PLO.
  3. Need to link from PHYS494
  4. Evaluate how PLO can be included at Intro and developing levels.
- PROGRESS: still need to do





2 Holistic program improvement goals: Programs are expected to have at least one action plan to improve student learning annually. If you have not yet identified an action plan associated with this year's assessment results, or if the department has identified additional issues that require action plans, describe the specific, measurable action plan and its relation to evidence of student performance.

The program is overall good.  
A couple of action items:

- Proliferate the use of Matlab in most upper-level physics courses
- Make sure we have assignments that align with CLOs, and make sure linking is set up properly

## Assessment Rubric





1 **Process**

	1	2	3	4
<b>Is the plan being implemented faithfully and revised as needed?</b>	 Assessment plan is not implemented.	 Most aspects of plan are being implemented or all aspects are implemented to some degree.	 Assessment plan is fully implemented.	 Plan is faithfully executed and modified/evaluated as needed.

2 Explanations:

Still many assignment links missing, and assignments that don't perfectly align with the CLOs

3 Engagement


	1	2	3	4
<b>Are all relevant parties are meaningfully involved in the creation/revision, implementation, analysis, interpretation and learning improvement process?</b>	<p> Limited involvement beyond chair/director</p>	<p> All educators contributing to the curriculum are aware of process and results</p>	<p> All educators contributing to the curriculum participate in conversations regarding the use of assessment data to improve student learning</p>	<p> All relevant stakeholders (students, employers, alumni) are meaningfully involved in the creation/revision, implementation, analysis, interpretation, and/or improvement processes associated with this assessment plan.</p>

4 Explanations:

Engagement is good from all physics faculty

5 Program Learning Objectives







	1	2	3	4
<p><b>Are the program learning objectives clear, measurable, aligned with ULOs/GLOs, and representative of the range of learning for that major/program?</b></p>	<p style="text-align: center;"></p> <p>PLOs are problematic (vague, abstract, not aligned with ULOs/GLOs) or missing.</p>	<p style="text-align: center;"></p> <p>PLOs are clear, mostly measurable, partially aligned with ULOs/GLOs.</p>	<p style="text-align: center;"></p> <p>PLOs are clear, measurable, aligned with ULOs/GLOs, and represent a summary of the knowledge, skills, beliefs, and values that a graduate of this major/program should attain by completing the required curriculum, accounting for variations in learning outcomes due to tracks/concentrations</p>	<p style="text-align: center;"></p> <p>PLOs are clear, measurable, aligned with ULOs/GLOs, and representative of the range of learning students achieve through completion of the program. The learning objectives provide a comprehensive view of the knowledge, skills, beliefs, and values that are important for a graduate of this major/program and account for variations in learning outcomes due to tracks/concentrations.</p>

**6** Explanations:

Learning objectives are good

**7** Measures

1	2	3	4

	1	2	3	4
<p><b>Are the instruments used to assess learning relevant to the objective? Do measures yield information/data you can use to drive improvement?</b></p>	<p style="text-align: center;"></p> <p>Not all objectives have a measure identified. OR Measures do not directly connect to the objectives.</p>	<p style="text-align: center;"></p> <p>All objectives have at least one direct measure. Measures connect to learning objectives superficially or tangentially and/or include learning other than stated objectives. Relies almost exclusively on the same form of assessment (survey, exam, project). Relies almost exclusively on data from a single source (course, program, activity).</p>	<p style="text-align: center;"></p> <p>All objectives have at least one direct measure. Some objectives have multiple measures. Measures clearly connect to learning objectives. And two of the following four criteria: Objective measures more than one point in time (formative). Indirect measure are used strategically. Plan Incorporates different forms of assessment (survey, exam, project). Plan incorporates from a variety of sources (course, program, activity).</p>	<p style="text-align: center;"></p> <p>Measures meet all of the following criteria: All objectives have at least one direct measure. Some objectives have multiple measures. Measures clearly connect to learning objectives. Objectives measured more than one point in time (formative). Indirect measures are used strategically. Plan incorporates different forms of assessment (survey, exam, project). Plan incorporates data from a variety of sources (course, program, activity).</p>

**8** Explanations:

Some linking is missing, and some assignments are not perfectly aligned with CLOs

**9** **Targets**

	1	2	3	4





	1	2	3	4
<p><b>Are the targets based on professional standards and/or analysis of past student work? Are targets challenging and achievable?</b></p>	<p style="text-align: center;"></p> <p>Some targets are missing.</p>	<p style="text-align: center;"></p> <p>Targets are arbitrarily chosen or reflect minimal expectations.</p>	<p style="text-align: center;"></p> <p>Targets are challenging and achievable based on prior student performance, and reflect an appropriate level of performance.</p>	<p style="text-align: center;"></p> <p>Targets are challenging and achievable. Targets are based on professional standards and/or prior student performance. Targets are set at a level to inspire program improvement.</p>

**10** Explanations:

Hard to set relevant targets when we don't have that much relevant data

**11** **Timeline**

	1	2	3	4

	1	2	3	4
<p><b>Is the timeline for data collection manageable with sufficient data points to effectively inform decision making and program review?</b></p>	<p></p> <p>Not identified clearly for all measures.</p>	<p></p> <p>Clearly states semester/year for each objective/measure. Data analysis delayed from data collection. Time between collection points may not facilitate informed decision making.</p>	<p></p> <p>Clearly stated and manageable schedule. At least two data points for each objective per review cycle.</p>	<p></p> <p>Timeline for data collection is manageable and allows for continuous improvement with timely and meaningful decision making even before program review.</p>

12 Explanations:

Need to update some measures to average over a longer time

13 **Action Plan**

	1	2	3	4

	1	2	3	4
<p><b>Is the department effectively examining and using assessment data to revise curriculum and pedagogy to support student learning?</b></p>	<p>Assessment data not collected/analyzed/used for decisions and/or results not documented in AEFIS.</p>	<p>Data collected, documented and discussed by department. Department reviewed confidence in measures and data as sufficient indicators of student performance. If data indicated changes were needed, action plans were developed in consultation with dean (e.g. improving outcomes, measures, targets, curriculum or pedagogy).</p>	<p>Data collected, documented and discussed by department. Department and dean confirmed confidence in measures and data as sufficient indicators of student performance. Action plans (e.g. improving outcomes, measures, targets, curriculum or pedagogy) developed in consultation with dean. If prior year data warranted action plans, the department implemented the changes.</p>	<p>Department collected and discussed follow-up data after the implementation of action plans in order to determine whether changes resulted in improvement or whether additional action is necessary. Data confirms effective curriculum and pedagogy for learning outcomes. Score of 4 should be assigned only if objectives, measures, targets and timeline all score a 4.</p>

14 Explanations:

Hard to make relevant action plans without having more relevant data

15 **Dissemination**

	1	2	3	4

	1	2	3	4
<p><b>Is the department communicating learning objectives, results and improvements related to student learning to a wide audience?</b></p>	<p><input checked="" type="radio"/></p> <p>No record of assessment results and changes made as a result of assessment findings.</p>	<p><input type="radio"/></p> <p>The department/program retains records of assessment results and positive changes made as a result of assessment findings, and results are entered in assessment software system.</p>	<p><input type="radio"/></p> <p>The department/program retains records of assessment results and changes made as a result of assessment findings, results are entered in assessment software system, and assessment results and improvements are publicly posted.</p>	<p><input type="radio"/></p> <p>The department/program retains records of assessment results and changes made as a result of assessment findings, and results are entered in assessment software system. Assessment results and improvements are publicly posted and shared proactively with faculty, prospective students, employers and alumni in ways that facilitate their discussion.</p>

16 Explanations:

What "wide audience" are we supposed to communicate to?

### Additional Feedback

1 Please enter any additional feedback for changes that should be made:

CLOSE AND EXIT

