Course Student Learning Outcomes Assessment

PHYS 150AC Introductory Physics I - Calculus

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Table of Contents

General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

Course Description

This course expands on the topics covered in Physics 150A by adding the application of calculus to problems in physics. Topics will include motion graphs motion with non-constant acceleration variable forces wave motion and thermodynamics.

Course Student Learning Outcomes

PHYS 150AC Introductory Physics I - Calculus Outcome Set

Outcome

Outcome	Mapping
Outcome 1 To analyze and solve problems involving kinematics, forces, energy, and oscillations using differential calculus.	**Institutional Student Learning Outcomes:** Act 1, Communicate 1, Learn 1, Learn 2, Think 1, Think 2
Outcome 2 To analyze and solve problems involving systems of particles, rotational motion, energy, and thermodynamics using integral calculus.	**Institutional Student Learning Outcomes:** Act 1, Communicate 1, Learn 1, Learn 2, Think 1, Think 2

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

PHYS 150AC Introductory Physics I - Calculus Outcome Set

Outcome

Outcome 1

To analyze and solve problems involving kinematics, forces, energy, and oscillations using differential calculus.

Measure: Physics 150AC - SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use differentiation to solve a Newton's law problem on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

If 70% of the students score 7 points or higher, the course is deemed successful.

Cycle of Assessment: This outcome is assessed during each fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the problem, scoring it based on the rubric, and compiling the assessment data.

Outcome 2

To analyze and solve problems involving systems of particles, rotational motion, energy, and thermodynamics using integral calculus.

Measure: Physics 150AC - SLO 2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration to solve for the center of mass on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

The course is successful when 70% of the students score at least 7 points on the assessment problem.

Cycle of Assessment: This outcomes is assessed every fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for creating the assessment problem, scoring the problem using the rubric, and compiling the assessment results.

Findings

Finding per Measure

PHYS 150AC Introductory Physics I - Calculus Outcome Set

Outcome

Outcome 1

To analyze and solve problems involving kinematics, forces, energy, and oscillations using differential calculus.

Measure: Physics 150AC - SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use differentiation to solve a Newton's law problem on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

If 70% of the students score 7 points or higher, the course is deemed successful.

Cycle of Assessment: This outcome is assessed during each fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the problem, scoring it based on the rubric, and compiling the assessment data.

Findings for Physics 150AC - SLO 1

Summary of Findings: 10 out of 11, or 91%, of the students were able to answer the question without making any major mistakes.

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: These results indicate that students are able to apply integration techniques to a physics problem.

Recommendations:

Outcome 2

To analyze and solve problems involving systems of particles, rotational motion, energy, and thermodynamics using integral calculus.

Measure: Physics 150AC - SLO 2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration to solve for the center of mass on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

The course is successful when 70% of the students score at least 7 points on the assessment problem.

Cycle of Assessment: This outcomes is assessed every fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for creating the assessment problem, scoring the problem using the rubric, and compiling the assessment results.

Findings for Physics 150AC - SLO 2

Summary of Findings: 9 out of 11, or 82%, of the students were able to answer the question without making any major mistakes.

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: These results indicate that students are able to apply integration techniques to a physics problem.

Recommendations:

Overall Recommendations

Students in 150AC continue to excel. This is not unexpected because these students are all hoping to attend medical school. Based upon these results, not changes are needed at this time.

Plans of Action

Status Reports

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

PHYS 150AC Introductory Physics I - Calculus Outcome Set

Outcome

Outcome 1

To analyze and solve problems involving kinematics, forces, energy, and oscillations using differential calculus.

Measure: Physics 150AC - SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use differentiation to solve a Newton's law problem on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

If 70% of the students score 7 points or higher, the course is deemed successful.

Cycle of Assessment: This outcome is assessed during each fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the problem, scoring it based on the rubric, and compiling the assessment data.

Outcome 2

To analyze and solve problems involving systems of particles, rotational motion, energy, and thermodynamics using integral calculus.

Measure: Physics 150AC - SLO 2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration to solve for the center of mass on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

The course is successful when 70% of the students score at least 7 points on the assessment problem.

Cycle of Assessment: This outcomes is assessed every fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for creating the assessment problem, scoring the problem using the rubric, and compiling the assessment results.

Findings

Finding per Measure

PHYS 150AC Introductory Physics I - Calculus Outcome Set

Outcome

Outcome 1

To analyze and solve problems involving kinematics, forces, energy, and oscillations using differential calculus.

Measure: Physics 150AC - SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use differentiation to solve a Newton's law problem on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

If 70% of the students score 7 points or higher, the course is deemed successful.

Cycle of Assessment: This outcome is assessed during each fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the problem, scoring it based on the rubric, and compiling the assessment data.

Findings for Physics 150AC - SLO 1

Summary of Findings: 11 out of 15, or 73%, of the students were able to answer the question without making any major mistakes.

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: These results indicate that students are able to apply integration techniques to a physics problem.

Recommendations: Continue with this method of assessment in Fall 2014.

Outcome 2

To analyze and solve problems involving systems of particles, rotational motion, energy, and thermodynamics using integral calculus.

Measure: Physics 150AC - SLO 2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration to solve for the center of mass on an exam.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of setting up the problem. A score of 7 or better indicates that the student was able to answer the question with only minor mistakes.

The course is successful when 70% of the students score at least 7 points on the assessment problem.

Cycle of Assessment: This outcomes is assessed every fall semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for creating the assessment problem, scoring the problem using the rubric, and compiling the assessment results.

Findings for Physics 150AC - SLO 2

Summary of Findings: 12 out of 15, or 80%, of the students were able to answer the question without making any major mistakes.

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: These results indicate that students are able to apply integration techniques to a physics problem.

Recommendations: Continue with this same method of assessment in Fall 2014.

Overall Recommendations

The initial assessment results were very good. The data set is not large enough to know yet if this class was unique. The assessments will need to be carried out in Fall 2014 and then the results should be compared to Fall 2013.

Plans of Action

Status Reports

2012-2013 Assessment Cycle

- **Measurements**
- **Findings**
- **Plans of Action**
- **Status Reports**