Course Student Learning Outcomes Assessment

PHYS 150BC Introductory Physics II - Calculus

Created on: 10/22/2013 01:01:00 PM PST
Last Modified: 09/28/2015 04:01:19 PM PST

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General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

Course Description

This course expands on the topics covered in Physics 150B by adding the application of calculus to problems in physics. Topics will include electric fields Gauss' Law Ampere's Law Faraday's Law light and quantum mechanics.

Course Student Learning Outcomes

PHYS 150BC Introductory Physics II - Calculus Outcome Set

Outcome

Outcome	Mapping
Outcome 1 Analyze and solve physics problems involving electric current, electromagnetic induction, and wave equations using differential calculus.	**Institutional Student Learning Outcomes:** Act 1, Communicate 1, Learn 1, Think 1, Think 2
Outcome 2 Analyze and solve physics problem involving electric fields, magnetic fields, and probability 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 150BC Introductory Physics II - Calculus Outcome Set

Outcome

Outcome 1
Analyze and solve physics problems involving electric current, electromagnetic induction, and wave equations using differential calculus.

Measure: Physics 150BC - SLO1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to solve a Faraday's Law problem using differential calculus.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course will be assessed during each spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for selecting the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Outcome 2
Analyze and solve physics problem involving electric fields, magnetic fields, and probability using integral calculus.

Measure: Physics 150BC - SLO2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration of a wave function to find the probability of finding a particle in a particular location.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course is assessed every spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Findings

Finding per Measure

PHYS 150BC Introductory Physics II - Calculus Outcome Set

Outcome

Outcome 1

Analyze and solve physics problems involving electric current, electromagnetic induction, and wave equations using differential calculus.

Measure: Physics 150BC - SLO1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to solve a Faraday's Law problem using differential calculus.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course will be assessed during each spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for selecting the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Findings for Physics 150BC - SLO1

Summary of Findings: 5 out of 6, or 83%, 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: The outcome continues to be met easily, but the results may not remain consistent if the enrollment increases. At this time there is no need for changes, but increased enrollment is hoped for in the next couple of years that could yield different results.

Outcome 2

Analyze and solve physics problem involving electric fields, magnetic fields, and probability using integral calculus.

Measure: Physics 150BC - SLO2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration of a wave function to find the probability of finding a particle in a particular location.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course is assessed every spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Findings for Physics 150BC - SLO2

Summary of Findings: 6 out of 6, or 100%, 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: The results were excellent, but the sample size is small. It is unclear whether anything would need to be modified if the total course enrollment increases.

Overall Recommendations

The success of pre-medicine majors is typical based upon previous offerings of Physics 211 at SCC. These students are usually very dedicated and perform at a high level. It would be unusual for the outcome to not be met for this course.

Plans of Action

Status Reports

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

PHYS 150BC Introductory Physics II - Calculus Outcome Set

Outcome

Outcome 1

Analyze and solve physics problems involving electric current, electromagnetic induction, and wave equations using differential calculus.

Measure: Physics 150BC - SLO1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to solve a Faraday's Law problem using differential calculus.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course will be assessed during each spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for selecting the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Outcome 2

Analyze and solve physics problem involving electric fields, magnetic fields, and probability using integral calculus.

Measure: Physics 150BC - SLO2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration of a wave function to find the probability of finding a particle in a particular location.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course is assessed every spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Findings

Finding per Measure

PHYS 150BC Introductory Physics II - Calculus Outcome Set

Outcome

Outcome 1

Analyze and solve physics problems involving electric current, electromagnetic induction, and wave equations using differential calculus.

Measure: Physics 150BC - SLO1
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to solve a Faraday's Law problem using differential calculus.

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A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course will be assessed during each spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for selecting the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Findings for Physics 150BC - SLO1

Summary of Findings: 9 out of 9, or 100%, 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

Analyze and solve physics problem involving electric fields, magnetic fields, and probability using integral calculus.

Measure: Physics 150BC - SLO2
Course level; Direct - Exam

Description of Measurement Tool: Students were asked to use integration of a wave function to find the probability of finding a particle in a particular location.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score the students understanding of executing the problem. A score of 7 or better out of 10 indicates that the student was able to answer the question with only minor mistakes.

A course is successful if 70% of students reach the success level.

Cycle of Assessment: This course is assessed every spring semester.

Who is Responsible for Assessment Activity?: The instructor of record is responsible for choosing the question and scoring the assessment. The department chair is responsible for entering the results into Taskstream.

Findings for Physics 150BC - SLO2

Summary of Findings: 8 out of 9 or 89%, 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

This was the first time that this course was ever offered and the assessment results were encouraging. We will

continue to assess this course each year to ensure the level of success remains consistent.

Plans of Action

Status Reports

2012-2013 Assessment Cycle

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