

Course Student Learning Outcomes Assessment

MATH 287 Introduction to Linear Algebra and Different Equations

**Created on: 09/17/2013 02:59:00 PM PST
Last Modified: 03/11/2015 08:57:55 AM PST**

Table of Contents

General Information	1
Standing Requirements	2
Course Description.....	2
Course Student Learning Outcomes.....	2
2014-2015 Assessment Cycle	3
Measurements.....	3
Findings.....	3
Plans of Action.....	4
Status Reports.....	4
2013-2014 Assessment Cycle	5
Measurements.....	5
Findings.....	5
Plans of Action.....	6
Status Reports.....	6
2012-2013 Assessment Cycle	7
Measurements.....	7
Findings.....	7
Plans of Action.....	8
Status Reports.....	8

General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

📖 Course Description

Topics include matrices determinants vector spaces linear systems of equations linear product spaces first and second order differential equations systems of differential equations and the Laplace transform.

📖 Course Student Learning Outcomes

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome	
Outcome	Mapping
Outcome 1 State and apply basic definitions, properties and theorems of linear algebra and differential equations.	Institutional Student Learning Outcomes: Act 1, Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Think 1, Think 2
Outcome 2 Use matrices to solve systems of linear equations and analyze linear transformations and vector spaces.	Institutional Student Learning Outcomes: Act 1, Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Think 1, Think 2
Outcome 3 Correctly choose and apply techniques to solve various types of differential equations.	Institutional Student Learning Outcomes: Act 1, Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Think 1, Think 2
Outcome 4 Model and solve applications involving differential equations and linear algebra.	Institutional Student Learning Outcomes: Act 1, Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Think 1, Think 2

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome

Outcome 2

Use matrices to solve systems of linear equations and analyze linear transformations and vector spaces.

▼ **Measure:** Math 287 - SLO 2 - Fall 2014
Course level; Direct - Exam

Description of Measurement Tool: Students are given a final exam prepared by the teacher, and a matrix application to the solution of a homogeneous system of differential equations was scored using a rubric scale from 0-4:

- 4 - Exemplary, complete understanding
- 3 - Thoughtful, clear understanding
- 2 - Developing, literal
- 1 - Limited, barely acceptable
- 0 - Minimal, unacceptable

Criteria for Success: Individual & Collective Student Criterion: Individually, success is defined as earning a score of 2, 3, or 4 on the rubric. Collectively, success is defined as 70% of students achieving individual success.

Cycle of Assessment: This outcome is assessed every three years.

For this report, the data was gathered in Fall 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

Who is Responsible for Assessment Activity?: The Math 287 coordinator of record for 2014-2015, Randy Scott, is responsible for the assessment.

Findings

Finding per Measure

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome

Outcome 2

Use matrices to solve systems of linear equations and analyze linear transformations and vector spaces.

▼ **Measure:** Math 287 - SLO 2 - Fall 2014
Course level; Direct - Exam

Description of Measurement Tool: Students are given a final exam prepared by the teacher, and a matrix application to the solution of a homogeneous system of differential equations was scored using a rubric scale from 0-4:

- 4 - Exemplary, complete understanding
- 3 - Thoughtful, clear understanding
- 2 - Developing, literal
- 1 - Limited, barely acceptable
- 0 - Minimal, unacceptable

Criteria for Success: Individual & Collective Student Criterion: Individually, success is defined as earning a score of 2, 3, or 4 on the rubric. Collectively, success is defined as 70% of students achieving individual success.

Cycle of Assessment: This outcome is assessed every three years.

For this report, the data was gathered in Fall 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

Who is Responsible for Assessment Activity?: The Math 287 coordinator of record for 2014-2015, Randy Scott, is responsible for the assessment.

Findings for Math 287 - SLO 2 - Fall 2014

Summary of Findings: The scores based on the rubric were

0 - 0

1 - 5

2 - 12

3 - 10

4 - 6

28 of 33 students achieved success, for a collective score of 84.8%

Results: Criteria for Success Achievement Status: Exceeded

Analysis of Findings: Math 287 is our ultimate math course. We expect these students to be the best, and they are. Frankly, the coordinator is surprised at how many of the students scored a 2.

Recommendations: Keep up the good work.

Overall Recommendations

No text specified

◆ **Plans of Action**

◆ **Status Reports**

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome

Outcome 4

Model and solve applications involving differential equations and linear algebra.

▼ **Measure:** Math 287 SLO 4
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with an embedded question pertaining to specific topics for this SLO. The rubric scale is from 1 - 5.

- 5 - Exemplary, complete understanding
- 4 - Thoughtful, clear understanding
- 3 - Developing, literal
- 2 - Limited, barely acceptable
- 1 - Minimal, unacceptable

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3, 4, or 5 using the 5-point rubric. Collectively, success is defined as 70% of the class being individually successful.

Cycle of Assessment: This outcome will be assessed in the fall semester every three years.

For this report, the data was gathered in Fall 2013, collated, analyzed, reported, and discussed in Spring 2014, with recommendations implemented in Fall 2014.

Who is Responsible for Assessment Activity?: The Math 287 coordinator of record for 2013-2014, Randy Scott, is responsible for the assessment.

Findings

Finding per Measure

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome

Outcome 4

Model and solve applications involving differential equations and linear algebra.

▼ **Measure:** Math 287 SLO 4
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with an embedded question pertaining to specific topics for this SLO. The rubric scale is from 1 - 5.

- 5 - Exemplary, complete understanding
- 4 - Thoughtful, clear understanding
- 3 - Developing, literal
- 2 - Limited, barely acceptable
- 1 - Minimal, unacceptable

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3, 4, or 5 using the 5-point rubric. Collectively, success is defined as 70% of the class being individually successful.

Cycle of Assessment: This outcome will be assessed in the fall semester every three years.

For this report, the data was gathered in Fall 2013, collated, analyzed, reported, and discussed in Spring 2014, with recommendations implemented in Fall 2014.

Who is Responsible for Assessment Activity?: The Math 287 coordinator of record for 2013-2014, Randy Scott, is responsible for the assessment.

Findings for Math 287 SLO 4

Summary of Findings: One section of Math 287 was offered with a total of 34 students assessed (N=34).

Score - # - %

1 - 0 - 0.0%

2 - 2 - 5.9%

3 - 3 - 8.8%

4 - 6 - 17.6%

5 - 23 - 67.6%

Overall success rate:

94.1% of the students scored 3, 4, or 5 on this question about the amount of salt in a tank at time t given inflow and outflow rates and concentrations.

Results: Criteria for Success Achievement Status: Exceeded

Analysis of Findings: The students showed mastery in this SLO topic. The papers that scored 2 demonstrated a serious error in the analysis of the application.

Recommendations: There are no recommendations at this time.

Overall Recommendations

No text specified

 **Plans of Action**

 **Status Reports**

2012-2013 Assessment Cycle

Measurements

Outcomes and Measures

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome

Outcome 4

Model and solve applications involving differential equations and linear algebra.

▼ **Measure:** Math 287, Fall 2012, SLO 3
Course level; Direct - Exam

Description of Measurement Tool: Score #1 on each final exam using a 5-point rubric. For Fall 2012, #1 was a first-order, linear differential equation with non-constant coefficients. The solution required the use of an integrating factor.

- 5 - Exemplary, complete understanding
- 4 - Thoughtful, clear understanding
- 3 - Developing, literal
- 2 - Limited, barely acceptable
- 1 - Minimal, unacceptable

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3, 4, or 5 using the 5-point rubric. Collectively, success is defined as 70% of the class being individually successful.

Cycle of Assessment: This outcome will be assessed in the fall semester every three years.

For this report, the data was gathered in Fall 2012, collated, analyzed, reported, and discussed in Spring 2013, with recommendations implemented in Fall 2013.

Who is Responsible for Assessment Activity?: The course coordinator (for Fall 2012, Randy Scott) is responsible for administering the assessment.

Findings

Finding per Measure

MATH 287 Introduction to Linear Algebra and Different Equations Outcome Set

Outcome

Outcome 4

Model and solve applications involving differential equations and linear algebra.

▼ **Measure:** Math 287, Fall 2012, SLO 3
Course level; Direct - Exam

Description of Measurement Tool: Score #1 on each final exam using a 5-point rubric. For Fall 2012, #1 was a first-order, linear differential equation with non-constant coefficients. The solution required the use of an integrating factor.

- 5 - Exemplary, complete understanding
- 4 - Thoughtful, clear understanding
- 3 - Developing, literal
- 2 - Limited, barely acceptable
- 1 - Minimal, unacceptable

Criteria for Success: Individual & Collective Student Criterion: Individually, success is

earning a 3, 4, or 5 using the 5-point rubric.
Collectively, success is defined as 70% of the class being individually successful.

Cycle of Assessment: This outcome will be assessed in the fall semester every three years.

For this report, the data was gathered in Fall 2012, collated, analyzed, reported, and discussed in Spring 2013, with recommendations implemented in Fall 2013.

Who is Responsible for Assessment Activity?: The course coordinator (for Fall 2012, Randy Scott) is responsible for administering the assessment.

Findings for Math 287, Fall 2012, SLO 3

No Findings Added

Overall Recommendations

No text specified

 **Plans of Action**

 **Status Reports**