Course Student Learning Outcomes Assessment

MATH 170 Pre-Calculus Mathematics

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General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

Course Description

Advanced algebraic topics. Study of rational trigonometric exponential and logarithmic functions and analytic geometry. Preparation for Mathematics 180.

Course Student Learning Outcomes

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome	Mapping
Outcome 1 Use algebraic, numerical, and graphical processes to manipulate and analyze equations, inequalities, and functional relationships.	**Institutional Student Learning Outcomes:** Communicate 1, Communicate 2, Learn 1, Learn 2, Think 1, Think 2
Outcome 2 Formulate and analyze mathematical models for a variety of real-world phenomenon and use mathematical and technological tools to determine the veracity of the model.	**Institutional Student Learning Outcomes:** Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Think 1, Think 2

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome 2
Formulate and analyze mathematical models for a variety of real-world phenomenon and use mathematical and technological tools to determine the veracity of the model.

Measure: Math 170 SLO 2
Course level; Direct - Exam

Description of Measurement Tool: Students are given a 22 question departmental final. Four of these questions pertain to specific topics for this SLO.

The rubric scale used is from 0 - 3.
3: Correct with appropriate approach
2: Correct up to a minor error
1: Some progress
0: blank or no appropriate progress

Criteria for Success: Individual & Collective Student Criterion: Individually, success is an average score of 2 or 3 on the rubric scale.
Collectively, success is defined as 70% of students being individually successful.

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

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

Who is Responsible for Assessment Activity?: The Math 170 coordinator of record for 2014-2015, Joyce Wagner, is responsible for the assessment.

Findings

Finding per Measure

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome 2
Formulate and analyze mathematical models for a variety of real-world phenomenon and use mathematical and technological tools to determine the veracity of the model.

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

Who is Responsible for Assessment Activity?: The Math 170 coordinator of record for 2014-2015, Joyce Wagner, is responsible for the assessment.

Findings for Math 170 SLO 2

Summary of Findings: Out of 166 collected final exams from 6 different sections, n = 44 finals were randomly selected.

Four questions were analyzed according to the rubric above.

Student success rates per question:

1) Modeling a rational function: 65.9%
2) Modeling a conic: 72.7%
3) Modeling logarithmic/exponential functions: 70.5%
4) Modeling exponential growth: 72.7%

Overall: 70.45%

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: The first question was multiple-choice, and students only received a 3 or 0. It is difficult to determine whether an error was minor or more significant.
There didn't seem to be much variation across sections.

Recommendations: These results will be discussed at a department meeting and presented to future instructors.

The course material being covered was modified slightly to match the CID descriptor. The department should have a discussion about any impacts from this change and to determine if further modifications are necessary.

Overall Recommendations

No text specified

Plans of Action

Status Reports

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome 1
Use algebraic, numerical, and graphical processes to manipulate and analyze equations, inequalities, and functional relationships.

Measure: Math 170 SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with five embedded questions pertaining to specific topics for this SLO.

A random sample of 12 final exams from each of five different sections held in Spring 2013 or Fall 2013 was analyzed, for a total of 60 exams.

Criteria for Success: Individual & Collective Student Criterion: Individually, a student is considered "successful" on a question if they showed appropriate work and were correct up to a minor computational error.

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 170 coordinator of record for 2013-2014, Joyce Wagner, is responsible for the assessment.

Findings

Finding per Measure

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome 1
Use algebraic, numerical, and graphical processes to manipulate and analyze equations, inequalities, and functional relationships.

Measure: Math 170 SLO 1
Course level; Direct - Exam

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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 170 coordinator of record for 2013-2014, Joyce Wagner, is responsible for the assessment.

Findings for Math 170 SLO 1

Summary of Findings: A random sample of 12 final exams from each of five different sections held in Spring 2013 or Fall 2013 was analyzed, for a total of 60 exams.

- Question 1 (domain): 60% overall rate of success.
- Question 2 (rewrite logarithm using properties): 45% overall rate of success.
- Question 3 (difference quotient): 65% overall rate of success.
- Question 4 (logarithmic equation): 51.7% overall rate of success.
- Question 5 (rational inequality): 51.7% overall rate of success.

Overall Success: 54.7%

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: None of the questions reached an aggregated 70% success rate, though there was variation among the 5 different sections. The SLO was met in two of the sections.

There seemed to be little overall difference between the spring and fall semester classes, though there was a change in textbook.

The SLO was met for some sections, but NOT MET overall.

Recommendations: These assessment results should be shared with all math faculty.

Overall Recommendations

No text specified

Plans of Action

Actions

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome 1
Use algebraic, numerical, and graphical processes to manipulate and analyze equations, inequalities, and functional relationships.

Action: Math 170 SLO 1

This Action is associated with the following Findings
No supporting Findings have been linked to this Action.

Details of Plan of Action: These results will be shared with and discussed among current and past Math 170 instructors.

A mid-semester reminder will be sent to all current Math 170 instructors regarding covering all the material on the course reference sheet.

Plan of Action Timeline: We will reassess this SLO in Fall of 2016.

Who is responsible for carrying out the Plan of Action?: The Math 170 coordinator(s) of

record for 2016-2017 will be responsible for the assessment.

How will you determine if the Plan of Action has been effective?: This Plan of Action is considered successful if the overall success rate improves by 5 percentage points or more.

Additional Resources Required (if any):

Budget request amount: $0.00

Priority: Medium

Status Reports

Action Statuses

MATH 170 Pre-Calculus Mathematics Outcome Set

Outcome

Outcome 1
Use algebraic, numerical, and graphical processes to manipulate and analyze equations, inequalities, and functional relationships.

Action: Math 170 SLO 1

Details of Plan of Action: These results will be shared with and discussed among current and past Math 170 instructors.

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Plan of Action Timeline: We will reassess this SLO in Fall of 2016.

Who is responsible for carrying out the Plan of Action?: The Math 170 coordinator(s) of record for 2016-2017 will be responsible for the assessment.

How will you determine if the Plan of Action has been effective?: This Plan of Action is considered successful if the overall success rate improves by 5 percentage points or more.

Additional Resources Required (if any):

Budget request amount: $0.00

Priority: Medium

Status for Math 170 SLO 1

No Status Added

Status Summary

No text specified

Summary of Next Steps

No text specified

2012-2013 Assessment Cycle

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