

Course Student Learning Outcomes Assessment

MATH 150 Calculus for Biological, Management and Social Sciences

**Created on: 09/17/2013 02:36:00 PM PST
Last Modified: 03/11/2015 08:49:19 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.....	7
2012-2013 Assessment Cycle	9
Measurements.....	9
Findings.....	9
Plans of Action.....	9
Status Reports.....	9

General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

📖 Course Description

Single and multi-variable calculus including limits derivatives integrals exponentials and logarithmic functions and partial derivatives. Applications are drawn from Biology Social Science and Business.

📖 Course Student Learning Outcomes

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome	
Outcome	Mapping
Outcome 1 Apply appropriate critical thinking, analytical reasoning and problem solving techniques to model real world contexts in the fields of Business, Economics, Social Sciences and Biology.	Institutional Student Learning Outcomes: Act 3, Learn 2, Think 1, Think 2, Think 3
Outcome 2 Solve problems using differentiation and integration of single- and multi-variable calculus.	Institutional Student Learning Outcomes: Communicate 1, Communicate 2, Communicate 3, Think 2
Outcome 3 Interpret and communicate mathematical results (from models in fields mentioned in "A") in a clear, accurate and professional manner.	Institutional Student Learning Outcomes: Act 2, Communicate 1, Communicate 2, Communicate 3, Learn 2, Learn 3, Think 2, Think 3
Outcome 4 Analyze the results of modeling real world data and contrast interpolative and extrapolative barriers to their application.	Institutional Student Learning Outcomes: Act 1, Act 2, Act 3, Learn 1, Learn 2, Learn 3, Think 1, Think 2, Think 3

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome

Outcome 1

Apply appropriate critical thinking, analytical reasoning and problem solving techniques to model real world contexts in the fields of Business, Economics, Social Sciences and Biology.

▼ **Measure:** Math 150 SLO 1 Fall 2014
Course level; Direct - Exam

Description of Measurement Tool: Students are given a final exam prepared by each teacher, and a modeling problem is 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 2, 3, or 4 on the rubric scale
Collectively, success is defined as 65% of the class being individually successful.

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 150 coordinator of record for 2014-2015, Randy Scott, is responsible for the assessment.

Findings

Finding per Measure

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome

Outcome 1

Apply appropriate critical thinking, analytical reasoning and problem solving techniques to model real world contexts in the fields of Business, Economics, Social Sciences and Biology.

▼ **Measure:** Math 150 SLO 1 Fall 2014
Course level; Direct - Exam

Description of Measurement Tool: Students are given a final exam prepared by each teacher, and a modeling problem is 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 2, 3, or 4 on the rubric scale
Collectively, success is defined as 65% of the class being individually successful.

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 150 coordinator of record for 2014-2015, Randy Scott, is responsible for the assessment.

Findings for Math 150 SLO 1 Fall 2014

Summary of Findings: Final exams were reviewed from 3 sections of Math 150 conducted during the Fall 2014 semester. One modeling problem on each of 52 exams was scored with the rubric.

0 – 1
1 – 15
2 – 16
3 – 14
4 – 6

36 of 52 met the criteria of 2, 3, or 4 on the rubric, for a total of 69.2%

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: Math 150 is a challenging course with an accomplished group of students. This group of students generally performs at a college-level in their mathematics, writing, and critical analysis.

Recommendations: These results will be sent to all full-time faculty, and current adjunct Math 150 instructors.

Overall Recommendations

No text specified

Plans of Action

Status Reports

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome

Outcome 4

Analyze the results of modeling real world data and contrast interpolative and extrapolative barriers to their application.

▼ **Measure:** Math 150 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 150 coordinator of record for 2013-2014, Randy Scott, is responsible for the assessment.

Findings

Finding per Measure

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome

Outcome 4

Analyze the results of modeling real world data and contrast interpolative and extrapolative barriers to their application.

▼ **Measure:** Math 150 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 150 coordinator of record for 2013-2014, Randy Scott, is responsible for the assessment.

Findings for Math 150 SLO 4

Summary of Findings: A total of 70 final exams from Fall 2013 were scored.

Overall Success Rate:

50.4% of the students' responses scored 3, 4, or 5 on these questions asking for interpretation of previously computed results.

a: Marginal Cost

5 4 3 2 1
9 30 18 8 5

b: Average Cost

5 4 3 2 1
7 5 17 21 20

c: Compare and Interpret

5 4 3 2 1
5 4 14 20 27

d: Compare and Interpret

5 4 3 2 1
5 8 19 21 17

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: Results on this question are interesting.

Part a asked for the marginal cost, and part b asked for the average cost. Clearly, the students did not perform as well as we would have liked on computing average cost.

Parts c and d asked to compare and interpret, again the students did not do as well as we would like.

- Recommendations:**
- 1) Inform department of results
 - 2) Include results in information disseminated to Math 150 instructors in subsequent semesters.
 - 3) Discuss imbedded assessment with Math 150 faculty before, during, and after the semester.
 - 4) Choose a question that more directly addresses the SLO being assessed.

Overall Recommendations

No text specified

 **Plans of Action**

Actions

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome

Outcome 4

Analyze the results of modeling real world data and contrast interpolative and extrapolative barriers

▼ **Action: Math 150 SLO 4**

This Action is associated with the following Findings

No supporting Findings have been linked to this Action.

to their application.

Details of Plan of Action: 1) Inform all math faculty of results.

2) Include results in information disseminated to Math 150 instructors in subsequent semesters.

3) Discuss imbedded assessment with Math 150 faculty before, during, and after the semester.

4) Choose a question that more directly addresses the SLO being assessed.

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 150 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:

Status Reports

Action Statuses

MATH 150 Calculus for Biological, Management and Social Sciences Outcome Set

Outcome

Outcome 4

Analyze the results of modeling real world data and contrast interpolative and extrapolative barriers to their application.

▼ Action: Math 150 SLO 4

Details of Plan of Action: 1) Inform all math faculty of results.

2) Include results in information disseminated to Math 150 instructors in subsequent semesters.

3) Discuss imbedded assessment with Math 150 faculty before, during, and after the semester.

4) Choose a question that more directly addresses the SLO being assessed.

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 150 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:

Status for Math 150 SLO 4



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**