

Course Student Learning Outcomes Assessment

MATH 180 Analytic Geometry and Calculus

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General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

📖 Course Description

Limits and continuity derivatives and integrals of algebraic trigonometric and other transcendental functions.
Applications including extrema tests related rates and areas.

📖 Course Student Learning Outcomes

MATH 180 Analytic Geometry and Calculus Outcome Set

| Outcome | |
|---|--|
| Outcome | Mapping |
| Outcome 1 Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals. | Institutional Student Learning Outcomes: Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Learn 3, Think 1, Think 2, Think 3 |
| Outcome 2 Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems. | Institutional Student Learning Outcomes: Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Learn 3, Think 1, Think 2, Think 3 |

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

MATH 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

▼ **Measure:** Math 180 SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with an embedded question pertaining to u-substitution with limits of integration for this SLO. The rubric scale is from 0 - 4.

Rubric:

- 4 pts – clear, complete solution
- 3 pts – small mistakes not related to the concept, concept is understood
- 2 pts – mistakes, concept is partially understood
- 1 pt - some relevant work, concept not understood
- 0 pt – blank, no relevant work

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3 or 4 using the 4-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 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

Who is Responsible for Assessment Activity?: The Math 180 coordinator, Alicia Frost, is responsible for the assessment.

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ **Measure:** Math 180 SLO 2
Course level; Direct - Exam

Description of Measurement Tool: : Students are given a departmental final with an embedded question pertaining to optimization for this SLO. The rubric scale is from 0 - 4.

Rubric:

- 4 pts – clear, complete solution
- 3 pts – small mistakes not related to the concept, concept is understood
- 2 pts – mistakes, concept is partially understood
- 1 pt - some relevant work, concept not understood
- 0 pt – blank, no relevant work

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3 or 4 using the 4-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 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

Who is Responsible for Assessment Activity?: The Math 180 coordinator, Alicia Frost, is responsible for the assessment.

 Findings

Finding per Measure

MATH 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

▼ **Measure:** Math 180 SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with an embedded question pertaining to u-substitution with limits of integration for this SLO. The rubric scale is from 0 - 4.

Rubric:

- 4 pts – clear, complete solution
- 3 pts – small mistakes not related to the concept, concept is understood
- 2 pts – mistakes, concept is partially understood
- 1 pt – some relevant work, concept not understood
- 0 pt – blank, no relevant work

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3 or 4 using the 4-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 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

Who is Responsible for Assessment Activity?: The Math 180 coordinator, Alicia Frost, is responsible for the assessment.

Findings for Math 180 SLO 1

Summary of Findings: A question about integrals from the final exam was assessed, $n = 26$.

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: % successful = 42.3%

Recommendations: Inform department of results

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ **Measure:** Math 180 SLO 2
Course level; Direct - Exam

Description of Measurement Tool: : Students are given a departmental final with an embedded question pertaining to optimization for this SLO. The rubric scale is from 0 - 4.

Rubric:

- 4 pts – clear, complete solution
- 3 pts – small mistakes not related to the concept, concept is understood
- 2 pts – mistakes, concept is partially understood

1 pt - some relevant work, concept not understood
 0 pt - blank, no relevant work

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3 or 4 using the 4-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 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

Who is Responsible for Assessment Activity?: The Math 180 coordinator, Alicia Frost, is responsible for the assessment.

Findings for Math 180 SLO 2

Summary of Findings: A question about using differentiation to optimize volume from the final exam was assessed, n = 26.

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: % successful = 84.6%

Recommendations: Inform department of results

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

This Findings is associated with the following Actions:

Math 180 SLO 2

(Plans of Action; 2014-2015 Assessment Cycle)

Overall Recommendations

No text specified

 **Plans of Action**

Actions

MATH 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

Action: Math 180 SLO 1

This Action is associated with the following Findings

No supporting Findings have been linked to this Action.

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the

calculus classes.

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 180 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

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ **Action:** Math 180 SLO 2

This Action is associated with the following Findings

Findings for Math 180 SLO 2

(Measurements and Findings; 2014-2015 Assessment Cycle)

Summary of Findings: A question about using differentiation to optimize volume from the final exam was assessed, $n = 26$.

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the calculus classes.

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 180 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 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

▼ **Action:** Math 180 SLO 1

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the calculus classes.

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 180 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 180 SLO 1

No Status Added

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ **Action:** Math 180 SLO 2

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the calculus classes.

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 180 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 180 SLO 2

No Status Added

Status Summary

No text specified

Summary of Next Steps

No text specified

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

MATH 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

▼ **Measure:** Math 180 SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with an embedded question pertaining to u-substitution with limits of integration for this SLO. The rubric scale is from 0 - 4.

Rubric:
4 pts – clear, complete solution
3 pts – small mistakes not related to the concept, concept is understood
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1 pt - some relevant work, concept not understood
0 pt – blank, no relevant work

Criteria for Success: Individual & Collective Student Criterion: Individually, success is earning a 3 or 4 using the 4-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 180 coordinator of record for 2013-2014, Alicia Frost, is responsible for the assessment.

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ **Measure:** Math 180 SLO 2
Course level; Direct - Exam

Description of Measurement Tool: : Students are given a departmental final with an embedded question pertaining to optimization for this SLO. The rubric scale is from 0 - 4.

Rubric:
4 pts – clear, complete solution
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Who is Responsible for Assessment Activity?: The Math 180 coordinator of record for 2013-2014, Alicia Frost, is responsible for the assessment.

 Findings

Finding per Measure

MATH 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

▼ **Measure:** Math 180 SLO 1
Course level; Direct - Exam

Description of Measurement Tool: Students are given a departmental final with an embedded question pertaining to u-substitution with limits of integration for this SLO. The rubric scale is from 0 - 4.

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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 180 coordinator of record for 2013-2014, Alicia Frost, is responsible for the assessment.

Findings for Math 180 SLO 1

Summary of Findings: There were 106 students assessed.

Overall success rate: 51.9%

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: Students seem to be scoring pretty much the same from semester to semester on integration.

There are concerns that students are not reaching a higher level of success on u-substitution integration as this is their only technique of integration before Calculus II.

The success on certain topics seemed to be instructor specific. This shows the stress on certain concepts per instructor.

Recommendations: Results should be shared with all math faculty.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the calculus classes.

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ **Measure:** Math 180 SLO 2

Course level; Direct - Exam

Description of Measurement Tool: : Students are given a departmental final with an embedded question pertaining to optimization for this SLO.
The rubric scale is from 0 - 4.

Rubric:

4 pts – clear, complete solution

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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 180 coordinator of record for 2013-2014, Alicia Frost, is responsible for the assessment.

Findings for Math 180 SLO 2

Summary of Findings: There were 106 students assessed.

Overall success rate: 55.7%

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: Students seem to be scoring pretty much the same from semester to semester on integration.

There are concerns that students are not reaching a higher level of success on u-substitution integration as this is their only technique of integration before Calculus II.

The success on certain topics seemed to be instructor specific. This shows the stress on certain concepts per instructor.

Recommendations: Results should be shared with all math faculty.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the calculus classes.

Overall Recommendations

No text specified

 **Plans of Action**

Actions

MATH 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

▼ Action: Math 180 SLO 1

This Action is associated with the following Findings

No supporting Findings have been linked to this Action.

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

Instructors need to stress the amount and type of acceptable work shown for full credit to unify the calculus classes.

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 180 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

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

▼ Action: Math 180 SLO 2

This Action is associated with the following Findings

No supporting Findings have been linked to this Action.

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

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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 180 Analytic Geometry and Calculus Outcome Set

Outcome

Outcome 1

Analyze functions analytically and graphically using limits, derivatives, definite and indefinite integrals.

 Action: Math 180 SLO 1

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

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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 180 SLO 1

No Status Added

Outcome 2

Apply basic definitions, properties and theorems of first semester Calculus to formulate elementary proofs and model and solve problems.

 Action: Math 180 SLO 2

Details of Plan of Action: Results will be shared with and discussed among past and current Calculus instructors.

Inform instructors who are teaching Math 180 next semester to stress topics that students are consistently weak on.

Department needs to discuss and reinforce the expectations of skills that students should obtain before passing Calculus I to all instructors teaching this course.

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Who is responsible for carrying out the Plan of Action?: The Math 180 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 180 SLO 2

No Status Added

Status Summary

No text specified

Summary of Next Steps

No text specified

2012-2013 Assessment Cycle

Measurements

Outcomes and Measures

Findings

Finding per Measure

Overall Recommendations

No text specified

Plans of Action

Actions

Status Reports

Action Statuses

Status Summary

No text specified

Summary of Next Steps

No text specified