

Program Outcomes Assessment

BA/BS in Mathematics

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General Information (Program Outcomes Assessment)

Standing Requirements

Mission Statement

The mission of the program is to prepare its graduates for work in mathematics-related employment and for further studies in the mathematical sciences.

Outcomes Library

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome	Mapping
Outcome 1.1: Students will construct direct proofs.	No Mapping
Outcome 1.2: Students will construct proofs by contradiction	No Mapping
Outcome 1.3: Students will construct proofs by induction.	No Mapping
Outcome 1.4: Students will construct examples/counterexample Students will construct examples and counterexamples.	No Mapping

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome	Mapping
Outcome 2.1: State mathematical results accurately Students will state mathematical results accurately for a research problem.	No Mapping
Outcome 2.2: Conduct an independent investigation Students will conduct an independent investigation of their problem.	No Mapping
Outcome 2.3: Oral presentation of research Students will make an oral presentation of their research report that is accessible to their peers.	Foundational Studies: 10. Express themselves effectively, professionally, and persuasively both orally and in writing.
Outcome 2.4: Witten report of research Students will make a detailed written report of their research.	Foundational Studies: 10. Express themselves effectively, professionally, and persuasively both orally and in writing.

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome	Mapping
Outcome 3.1: Prepared to persue graduate studies in math	No Mapping

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

Outcome 3.2: Prepared to pursue careers utilizing knowledge No Mapping

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

Curriculum Map

Active Curriculum Maps

 **BA/BS in Mathematics Curriculum Map** (See appendix)

Alignment Set: BA/BS in Mathematics Outcome Set - 2012

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Communication of Outcomes

Students and other stakeholders will be informed about the program's intended learning outcomes via the departmental web site.

Archive (This area is to be used for archiving pre-TaskStream assessment data and for current documents.)

Archive

File Attachments:

1. **Math_CS_Undergrad_Programs_Assessment_May2011.pdf** (See appendix)
-

2011-2012 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Mathematics Outcome Set - 2012

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

▼ **Measure:** ETS Major Field Test
Direct - Exam

Details/Description: standardized exam taken in MATH 494

(in 2012 will not be course-based)

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): Spring 2012 and every three years thereafter

Responsible Individual(s): Department Chair

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA in mathematics and related minors or second majors
Indirect - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): Spring 2012 and every three years thereafter

Responsible Individual(s): Department Chair

Assessment Findings

Finding per Measure

BA/BS in Mathematics Outcome Set - 2012

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate mastery of undergraduate

▼ **Measure:** ETS Major Field Test
Direct - Exam

Details/Description: standardized exam taken in MATH 494

mathematics that will allow them to pursue graduate studies in the mathematical sciences.

(in 2012 will not be course-based)

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): Spring 2012 and every three years thereafter

Responsible Individual(s): Department Chair

Findings for ETS Major Field Test

Summary of Findings: There is no data since no students took the ETS MFT and MATH 494 has not been offered yet.

Recommendations :

Reflections/Notes :

These Findings are associated with the following Actions:

Collect ETS MFT

(Action Plan; 2011-2012 Assessment Cycle)

Get approval to add MATH 494

(Action Plan; 2011-2012 Assessment Cycle)

Offer MATH 494 as needed for transfer student

(Action Plan; 2011-2012 Assessment Cycle)

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA in mathematics and related minors or second majors
Indirect - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): Spring 2012 and every three years thereafter

Responsible Individual(s): Department Chair

Findings for GPA in mathematics and related minors or second majors

Summary of Findings: Data: There were 4 graduates between Summer 2011 through Spring 2012. The post-calculus GPAs were 2.8, 3.0, 3.4, and 4.0.

Findings: 1 student exceeded expectations, 2 met expectations, and 1 did not meet expectations. That is, 75% of this cohort met or exceeded expectations. The target of 70% was surpassed.

Results: Target Achievement: Met

Recommendations :

Reflections/Notes :

Overall Recommendations

No text specified

Overall Reflection

No text specified

Action Plan

Actions

BA/BS in Mathematics Outcome Set - 2012

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

▼ Action: Collect ETS MFT

This Action is associated with the following Findings

Findings for ETS Major Field Test

(Assessment Plan and Assessment Findings; 2011-2012 Assessment Cycle)

Summary of Findings: There is no data since no students took the ETS MFT and MATH 494 has not been offered yet.

Action Details: Collect ETS MFT data in 2014-2015 and report in Spring 2015.

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Resource Allocations:

Priority:

▼ Action: Get approval to add MATH 494

This Action is associated with the following Findings

Findings for ETS Major Field Test

(Assessment Plan and Assessment Findings; 2011-2012 Assessment Cycle)

Summary of Findings: There is no data since no students took the ETS MFT and MATH 494 has not been offered yet.

Action Details: Get approval to add MATH 494 to the major requirements for Fall 2014

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Resource Allocations:

Priority:

▼ Action: Offer MATH 494 as needed for transfer student

This Action is associated with the following Findings

Findings for ETS Major Field Test

(Assessment Plan and Assessment Findings; 2011-2012 Assessment Cycle)

Summary of Findings: There is no data since no students took the ETS MFT and MATH 494 has not been offered yet.

Action Details: Offer MATH 494 as needed from Fall 2014 through Spring 2015 (for transfer students).

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Resource Allocations:

Priority:

**Outcome 3.2:
Prepared to pursue
careers utilizing
knowledge**

No actions specified

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

 **Status Report**

Action Statuses

BA/BS in Mathematics Outcome Set - 2012

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

**Outcome 3.1:
Prepared to pursue
graduate studies in
math**

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

▼ **Action:** Collect ETS MFT

Action Details: Collect ETS MFT data in 2014-2015 and report in Spring 2015.

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Resource Allocations:

Priority:

Status for Collect ETS MFT

No Status Added

▼ **Action:** Get approval to add MATH 494

Action Details: Get approval to add MATH 494 to the major requirements for Fall 2014

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Resource Allocations:

Priority:

Status for Get approval to add MATH 494

No Status Added

▼ **Action:** Offer MATH 494 as needed for transfer student

Action Details: Offer MATH 494 as needed from Fall 2014 through Spring 2015 (for transfer students).

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Resource Allocations:

Priority:

Status for Offer MATH 494 as needed for transfer student

No Status Added

**Outcome 3.2:
Prepared to pursue
careers utilizing
knowledge**

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

No actions specified

Status Summary

No text specified

Summary of Next Steps

No text specified



2012-2013 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Assessment Findings

Finding per Measure

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Problem

Summary of Findings: 21 students wrote proofs that were graded by the instructors

14 students exceeded expectations, 4 met expectations, and 3 did not meet expectations. That is, 86% of this cohort met or exceeded expectations. The target of 70% was surpassed.

Results: Target Achievement: Exceeded

Recommendations :

Reflections/Notes :

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Problem

Summary of Findings: 21 students wrote proofs by contradiction that were graded by the instructors

10 students exceeded expectations, 5 met expectations, and 6 did not meet expectations. That is, 71% of this cohort met or exceeded expectations. The target of 70% was surpassed.

Results: Target Achievement: Met

Recommendations :

Reflections/Notes :

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Problem

Summary of Findings: 10 students wrote proofs by induction that were graded by the instructors

2 students exceeded expectations, 1 met expectations, and 7 did not meet expectations. That is, 30% of this cohort met or exceeded expectations. The target of 70% was not reached.

Results: Target Achievement: Not Met

Recommendations :

Reflections/Notes :

These Findings are associated with the following Actions:

Proofs by induction

(Action Plan; 2012-2013 Assessment Cycle)

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Problem
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2012-13 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Problem

Summary of Findings: 21 students constructed examples that were graded by the instructors

8 students exceeded expectations, 7 met expectations, and 6 did not meet expectations. That is, 71% of this cohort met or exceeded expectations. The target of 70% was surpassed.

Results: Target Achievement: Met

Recommendations :

Reflections/Notes :

Overall Recommendations

No text specified

Overall Reflection

No text specified

Action Plan

Actions

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.3: Students will construct proofs by induction.

▼ Action: Proofs by induction

This Action is associated with the following Findings

Findings for Problem

(Assessment Plan and Assessment Findings; 2012-2013 Assessment Cycle)

Summary of Findings: 10 students wrote proofs by induction that were graded by the instructors. 2 students exceeded expectations, 1 met expectations, and 7 did not meet expectations. That is, 30% of this cohort met or exceeded expectations. The target of 70% was not reached.

Action Details: (1) Deemphasize direct proofs and do more proofs by induction.
(2) Monitor success of writing proofs, especially inductive proofs.

Implementation Plan (timeline): 2013-14

Key/Responsible Personnel: Dept. Chair, course instructors

Measures: Increased student achievement on writing proofs by induction in next assessment cycle.

Resource Allocations:

Priority: Medium

Status Report

Action Statuses

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.3: Students will construct proofs by induction.

▼ Action: Proofs by induction

Action Details: (1) Deemphasize direct proofs and do more proofs by induction.
(2) Monitor success of writing proofs, especially inductive proofs.

Implementation Plan (timeline): 2013-14

Key/Responsible Personnel: Dept. Chair, course instructors

Measures: Increased student achievement on writing proofs by induction in next assessment cycle.

Resource Allocations:

Priority: Medium

Status for Proofs by induction

No Status Added

Status Summary

No text specified

Summary of Next Steps

No text specified

2013-2014 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Mathematics Outcome Set - 2012

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview - Math 494
Direct - Other

Details/Description: MATH 494—student interview with the course professor
Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations
Implementation Plan (timeline): 2013-14 and every three years thereafter
Responsible Individual(s): course instructors/Department Chair

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview - Math 494
Direct - Other

Details/Description: MATH 494—student interview with the course professor
Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations
Implementation Plan (timeline): 2013-14 and every three years thereafter
Responsible Individual(s): course instructors/Department Chair

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral Presentation
Direct - Other

Details/Description: Math 494—oral presentation
Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations
Implementation Plan (timeline): 2013-14 and every three years thereafter
Responsible Individual(s): course instructors/Department Chair

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written Report
Direct - Student Artifact

Details/Description: Math 494—oral presentation
Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations
Implementation Plan (timeline): 2013-14 and every three years thereafter
Responsible Individual(s): course instructors/Department Chair

Assessment Findings

Finding per Measure

BA/BS in Mathematics Outcome Set - 2012

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview - Math 494
Direct - Other

Details/Description: MATH 494—student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2013-14 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Interview - Math 494

No Findings Added

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview - Math 494
Direct - Other

Details/Description: MATH 494—student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2013-14 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Interview - Math 494

No Findings Added

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral Presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2013-14 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Oral Presentation

No Findings Added

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written Report
Direct - Student Artifact

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2013-14 and every three years thereafter

Responsible Individual(s): course instructors/Department Chair

Findings for Written Report

No Findings Added

Overall Recommendations

No text specified

Overall Reflection

No text specified

 **Action Plan**

 **Status Report**



2014-2015 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written report
Direct - Student Artifact

Details/Description: Math 494—written report

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate

▼ **Measure:** ETS Major Field Exam
Direct - Exam

mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

Details/Description: ETS Major Field Test—standardized exam taken in MATH 494

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA
Direct - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

 **Assessment Findings**

Finding per Measure

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Interview with professor

No Findings Added

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Interview with professor

No Findings Added

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Oral presentation

No Findings Added

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written report
Direct - Student Artifact

Details/Description: Math 494—written report

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Written report

No Findings Added

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

▼ **Measure:** ETS Major Field Exam
Direct - Exam

Details/Description: ETS Major Field Test—standardized exam taken in MATH 494

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for ETS Major Field Exam

No Findings Added

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA
Direct - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for GPA

No Findings Added

Overall Recommendations

No text specified

Overall Reflection

No text specified

 **Action Plan**

 **Status Report**

2015-2016 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written report
Direct - Student Artifact

Details/Description: Math 494—written report

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate

▼ **Measure:** ETS Major Field Exam
Direct - Exam

mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

Details/Description: ETS Major Field Test—standardized exam taken in MATH 494

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA
Direct - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

 **Assessment Findings**

Finding per Measure

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

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Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Interview with professor

No Findings Added

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Interview with professor

No Findings Added

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Oral presentation

No Findings Added

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written report
Direct - Student Artifact

Details/Description: Math 494—written report

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Written report

No Findings Added

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

▼ **Measure:** ETS Major Field Exam
Direct - Exam

Details/Description: ETS Major Field Test—standardized exam taken in MATH 494

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for ETS Major Field Exam

No Findings Added

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA
Direct - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for GPA

No Findings Added

Overall Recommendations

No text specified

Overall Reflection

No text specified

 **Action Plan**

 **Status Report**



2016-2017 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

Students will learn to use and construct logical arguments.

Outcome 1.1: Students will construct direct proofs.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.3: Students will construct proofs by induction.

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Homework/Quiz/Exam problems
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Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

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Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

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Responsible Individual(s):

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written report
Direct - Student Artifact

Details/Description: Math 494—written report

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

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Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate

▼ **Measure:** ETS Major Field Exam
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mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

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Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA
Direct - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

 **Assessment Findings**

Finding per Measure

BA/BS in Mathematics Outcome Set - 2012

Objective 1: Use and construct logical arguments

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Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.2: Students will construct proofs by contradiction

▼ **Measure:** Homework/Quiz/Exam problems
Direct - Student Artifact

Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.3: Students will construct proofs by induction.

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Details/Description: MATH 380—problem on Homework or Quiz or Exam

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Outcome 1.4: Students will construct examples/counterexample

Students will construct examples and counterexamples.

▼ **Measure:** Homework/Quiz/Exam problems
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Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Homework/Quiz/Exam problems

No Findings Added

Objective 2: Communicate mathematics effectively

Students will communicate mathematics effectively.

Outcome 2.1: State mathematical results accurately

Students will state mathematical results accurately for a research problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Interview with professor

No Findings Added

Outcome 2.2: Conduct an independent investigation

Students will conduct an independent investigation of their problem.

▼ **Measure:** Interview with professor
Indirect - Interview

Details/Description: MATH 494— student interview with the course professor

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Interview with professor

No Findings Added

Outcome 2.3: Oral presentation of research

Students will make an oral presentation of their research report that is accessible to their peers.

▼ **Measure:** Oral presentation
Direct - Other

Details/Description: Math 494—oral presentation

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Oral presentation

No Findings Added

Outcome 2.4: Written report of research

Students will make a detailed written report of their research.

▼ **Measure:** Written report
Direct - Student Artifact

Details/Description: Math 494—written report

Target: 70% of the students completing the course will be assessed by the course professor as meeting or exceeding expectations

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for Written report

No Findings Added

Objective 3: Ready to use mathematical skills post-bac

Students will demonstrate that they are ready to use their mathematical skills in a post-baccalaureate position.

Outcome 3.1: Prepared to pursue graduate studies in math

Students will demonstrate mastery of undergraduate mathematics that will allow them to pursue graduate studies in the mathematical sciences.

▼ **Measure:** ETS Major Field Exam
Direct - Exam

Details/Description: ETS Major Field Test—standardized exam taken in MATH 494

Target: 70% of the students completing the seminar will meet expectations (at least 40th percentile but less than 70th percentile) or exceed expectations (at least 70th percentile)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for ETS Major Field Exam

No Findings Added

Outcome 3.2: Prepared to pursue careers utilizing knowledge

Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge.

▼ **Measure:** GPA
Direct - Other

Details/Description: post-calculus grade point average in mathematics and related minors or second majors

Target: 70% of the graduating students will meet expectations (at least 3.00 but less than 3.75) or exceed expectations (at least 3.75)

Implementation Plan (timeline): 2014-15 and every year thereafter

Responsible Individual(s):

Findings for GPA

No Findings Added

Overall Recommendations

No text specified

Overall Reflection

No text specified

2017-2018 Assessment Cycle

 **Assessment Plan**

 **Assessment Findings**

2018-2019 Assessment Cycle

 **Assessment Plan**

 **Assessment Findings**

2019-2020 Assessment Cycle

 **Assessment Plan**

 **Assessment Findings**

Appendix

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- A. **BA/BS in Mathematics Curriculum Map** (Curriculum Map)
 - B. **Math_CS_Undergrad_Programs_Assessment_May2011.pdf**
(Adobe Acrobat Document)
-

Undergraduate Programs Assessment Plan
Department of Mathematics and Computer Science
May 1, 2011

Indiana State University Mission Statement:

Indiana State University combines a tradition of strong undergraduate education with a focus on community and public service. We integrate teaching, research, and creative activity in an engaging, challenging, and supportive learning environment to prepare productive citizens for Indiana and the world.

From the above goal follow these specific goals of the department:

1. A mastery of the course material. It is an objective of the Department that students be thoroughly grounded in the major intellectual components of the discipline – including the interplay of theory and applications, study in depth, and the construction of general theories and proofs – so as to prepare them for future study and/or employment.
2. Overall knowledge of the subject upon graduation. It is an objective of the Department that our students develop the attitudes of mind and the analytic skills required for the efficient use, appreciation, and understanding of mathematics and computer science, and that our students are prepared to communicate mathematical and computer science concepts effectively, both orally and in writing, to non-mathematical and non-computer science, as well as mathematical, and computer science audiences.
3. Understanding the basic principles in mathematics and computer science. It is an objective of the Department to develop mathematical and computer science maturity in our students, i.e., the ability to read and comprehend technically-based material so that they can learn mathematics and computer science independently.
4. Explore the ways that people use mathematics and computer science in modern society. It is an objective of the Department to prepare students who understand the increasing role that mathematics and computer science play in modern society and to prepare students to take advantage of the role computer technology occupies in all phases of mathematics and computer science.
5. Knowledge of material applicable to chosen field. It is an objective of the Department to improve the mathematical and computer science skills of students who will be or are already employed in technical jobs by developing their abilities to solve open-ended problems independently.

LEARNING OUTCOMES IN MATHEMATICS AND COMPUTER SCIENCE

1. Students will gain skills in quantitative and qualitative methods of analysis and problem-solving.
2. Students will understand major theories and content of mathematics.
3. Students will be able to apply their knowledge of mathematics to real-world problems.
4. Students will gain effective oral and written communication skills.
5. Students will gain knowledge of good program development skills.
6. Students will gain team building skills to successfully participate on teams to solve problems.
7. Students will gain knowledge of different programming languages/paradigms and different computing platforms.

BRIEF DESCRIPTION OF CURRENT DEPARTMENT PROGRAMS

The Department offers three majors: one in mathematics and one in mathematics education; and one in computer science. Generally, the above goals apply to all three majors. However, there could be differences in emphasis between mathematics, mathematics education and computer science

PROPOSED INSTRUMENTS OF ASSESSMENT

The following are the instruments of assessment to be used by the Department in assessing all of its undergraduate programs.

1. Review of course materials and instructors' course summaries. [Indirect Measure] Course summaries of all mathematics and computer science courses are reviewed each year by the appropriate curriculum committees to study issues brought up by instructors. These issues include (but are not limited to): topics covered, preparedness of students, changes in curriculum or textbooks, calculator policies, and success of students. These reviews will take place in the Fall semester of each year. Any areas of concern will be considered by the appropriate curriculum committees during the academic year. These reviews are especially effective at evaluating student mastery of course material and their understanding of the basic principles of the discipline. By focusing on specific core courses the department is able to assess student understanding of basic principles, of the uses of mathematics and computer science in the world, and of their application skills.
2. Exit Survey of all graduating seniors. [Indirect Measure] These interviews are to be conducted and documented by the appropriate curriculum committees in collaboration with the Department chair. The surveys will take place near the end of the Fall and Spring semesters each year. The results of the surveys will be summarized and made available to all faculty. The Department will discuss the results of the surveys near the beginning of each Fall semester and will consider further any comments students made that the Department believes need further attention or discussion.
3. ETS Major Field Test. [Direct and Objective Measure] The Educational Testing Service (ETS) Major Field Test in Mathematics and Computer Science will be given to mathematics and computer science majors near the end of the Fall semester of the students senior year. According to information on ETS's website: "The tests are...designed to assess mastery of concepts and principles, as well as knowledge expected of students at the conclusion of a major in a specific subject area." Also, from ETS's website: "Each test delivers an individual score report, plus the mean scale score and standard deviation for the group of students tested. Several of the tests deliver individually reliable sub-scores that denote the achievement within broad areas within the field. Most of the tests also deliver assessment indicators, or scores relating the performance of the group of students within subareas of the major field of study." The appropriate curriculum committees will review the results of the Field Tests each Winter semester. If the results of the exams show deficiencies in any part of our programs it is the responsibility of the appropriate curriculum committee to recommend changes to address the areas of deficiencies.

Exit Survey

1. What were the reasons that you attended Indiana State University?
2. What and/or who influenced you to major in mathematics; mathematics education; or computer science?
3. What and/or who was most encouraging for you during your time at Indiana State University?
4. In reviewing your course work at Indiana State University, what courses in your major were most beneficial? Which courses did you feel were not beneficial? Why?
5. In reviewing your course work at Indiana State University, what courses outside of your major were most beneficial? Do you think any of the required courses outside your major were not beneficial? Why?
6. Did you take any mathematics, mathematics education or computer science courses at Indiana State University for which you felt the prerequisite courses did not give you adequate preparation? Please explain if you experienced any deficiencies.
7. Were there any topics or areas of mathematics, mathematics education or computer science that you feel were not adequately covered in your classes at Indiana State University?
8. Would you please comment on the advising you received?
9. Would you please comment on the scheduling of courses with respect to their availability on a semester by semester basis and the time (day, evening) they were offered?
10. Did you find the Indiana State University library adequate for your needs in your mathematics, mathematics education, or computer science courses? If you feel the Indiana State University library was not adequate, would you please be specific and also explain how you overcame this deficiency?
11. Would you please comment on the adequacy of the computer facilities for your undergraduate work?
12. What are your future career goals? Do you feel that you are adequately prepared for your career goals?
13. What do you believe that either the University or the Department of Mathematics and Computer Science should do in the near future to improve the undergraduate experience at Indiana State University?
14. Are there any comments that you would like to make?