University of Louisiana at Lafayette

Detailed Assessment Report
2015-2016 Mathematics MS
As of: 11/17/2016 11:29 AM CENTRAL
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request*.)

Mission / Purpose

The mission of the graduate program is to educate and prepare graduate students to make original contributions to mathematical sciences and to apply their knowledge to solve the important problems facing society. The goal of the M.S. program is to provide a solid basis that will prepare the student for either of: (i) Pursuit of a higher degree in Mathematics; (ii) application of mathematics, mathematical techniques, statistics, or statistical techniques in an industry or scientific setting; or (iii) teach mathematics at the secondary or college level.

Our graduate program is committed to the following core values:

- Excellence in teaching and research;
- Discovery of new knowledge;
- Diversity in our students;
- Professional and personal integrity.

Our graduate program has been a central part of the teaching and research mission of our department, and is an important component of our long term planning. Our commitment to graduate education has enhanced our reputation. Our focus on excellent education is consistent with the College and University's focus on facilitating quality teaching and learning.

Our focus on students' preparation is consistent with the College and University's focus on serving and preparing our students. Our mission and values are consistent with those for graduate programs in mathematics nationwide.

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Outcome 1: Demonstration of Content Knowledge
A candidate will demonstrate content knowledge of a body of graduate level mathematics, including basic topics from standard areas including advanced calculus and linear algebra.

Related Measures

M 1: Thesis Defense
Assessment Method for M.S. Students Choosing the Non-Thesis Option: The department will assign an advisory committee, including at least three mathematics graduate faulty members, to each student who is admitted to candidacy. This committee will prepare and administer a comprehensive written exam covering the candidate's coursework and also basic topics from standard areas including advanced calculus and linear algebra. The exam for a candidate with a non-thesis option will cover a larger collection of topics, determined by the candidate's coursework, than that for a thesis-option candidate. The committee will use the departmental rubric in evaluating a candidate's performance. Number of students assessed = 0 Assessment Method for M.S. Students Choosing the Thesis Option: The department will assign an advisory committee, including at least three mathematics graduate faculty members, to each student who is admitted to candidacy. This committee will prepare and administer a comprehensive written exam covering the candidate's coursework and also basic topics from standard areas including advanced calculus and linear algebra. The

committee will use the departmental rubric in evaluating a candidate's performance. Number of students assessed = 0 Assessment Method For Students Who are Continuing to a PhD.: Samples of student work from class assignments, course exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. Number of students assessed = 0 Assessment Timeline All students taking comprehensive exams will be assessed. All outcomes will be measured at least once per year.

Source of Evidence: Senior thesis or culminating major project

Target:
Definition of Success For Non-Thesis: Outcome 1: At least 70% of the students in any three-year period who attempt the exam will be given a rating which is at least satisfactory in accordance with the departmental rubric. Definition of Success for Thesis: Outcome 1: At least 70% of the students in any three-year period who attempt the exam will be given a rating which is at least satisfactory in accordance with the departmental rubric. Definition of Success for Students Who Continue to a Ph.D: Outcome 1: At least 70% of the students who plan to continue to work toward a Ph.D. will be given a rating which is at least satisfactory in accordance with the departmental rubric.

Finding (2015-2016) - Target: Met
One student took the MS Thesis option this period. In his exam he was scored "Highly Satisfactory" by all three examiners.

Related Action Plans (by Established cycle, then alpha):

Evaluation and tracking of goals
Using the forms and rubrics created for the purpose, Graduate Faculty assess students when they present Masters Exams, defend a Masters thesis, or obtain a Masters Degree in the non-thesis/non-exam option (open only for continuing PhD students who are successfully meeting the requirements for the PhD degree). Graduate Coordinator collects and collates the results. The Assessment Committee reviews adherence to and success in reaching the objectives.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: MS Exams | **Outcome/Objective:** Outcome 2: Demonstration of Research Potential
Measure: Non Thesis/Non Exam option | **Outcome/Objective:** Outcome 3: Demonstration of Understanding of Mathematical Theory
Measure: Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge

Implementation Description: Graduate Coordinator distributes forms and rubrics to Graduate Faculty, who assess the students in the exams and presentations. Graduate Coordinator collects and collates results, and follows up in case the objectives are not met or weaknesses in the implementations are revealed.
Responsible Person/Group: Graduate Coordinator
Additional Resources: None

Continue monitoring and help transition to PhD where applicable
Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress

Priority: High

Relationships (Measure | Outcome/Objective):

> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

M 2: MS Exams

Assessment Method for M.S. Students Choosing the Non-Thesis Option: Samples of student work from class assignments, exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. Number of students assessed = 2 Assessment Method for M.S. Students Choosing the Thesis Option: Samples of student work from class assignments, exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. In addition, the candidate's thesis will provide an assessment tool. Number of students assessed = 0 Assessment Method For Students Who are Continuing to a PhD.: A candidate is required to pass three written Ph.D. written comprehensive examinations, in a variety of content areas. Each exam is prepared and evaluated by a committee made up of at least three graduate faculty members who have expertise in that particular field. The committee follows a departmental rubric in evaluating the candidate's performance. These exams will provide adequate assessment for learning outcomes 1 and 3. Number of students assessed = 2 Assessment Timeline Half of second-year graduate students will be assessed. All outcomes will be measured at least once per year.

Source of Evidence: Writing exam to assure certain proficiency level

Target:

Definition of Success For Non-Thesis: Outcome 1: At least 70% of the students in any three-year period who attempt the exam will be given a rating which is at least satisfactory in accordance with the departmental rubric. Definition of Success for Thesis: Outcome 1: At least 70% of the students in any three-year period who attempt the exam will be given a rating which is at least satisfactory in accordance with the departmental rubric. Definition of Success for Students Who Continue to a Ph.D: Outcome 1: At least 70% of the students who plan to continue to work toward a Ph.D. will be given a rating which is at least satisfactory in accordance with the departmental rubric.

Finding (2015-2016) - Target: Met

Three students took the non-thesis exam option this review cycle. All three passed their MS Exams. Two of them were scored "Satisfactory" by all examiners; one received two "Satisfactory" scores and one "Highly Satisfactory" course. 100% of the students passed the comprehensive exam.

Related Action Plans (by Established cycle, then alpha):

Continue successful shepherding of students through MS degree

The MS Degree is meeting all of its goals; continued success requires continued effort on the part of faculty to help the students navigate the requirements successfully.

Established in Cycle: 2014-2015
Implementation Status: Finished
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Continue efforts to help students successfully complete their MS degrees. In the cases where the degree is not terminal, help the transition to the PhD degree
Projected Completion Date: 05/2016
Responsible Person/Group: Graduate Coordinator
Additional Resources: None

Continue monitoring and help transition to PhD where applicable

Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

M 3: Non Thesis/Non Exam option
Assessment Method for M.S. Students Choosing the Non-Thesis/Non Exam Option: The written comprehensive exam will provide an assessment tool for this outcome. All outcomes will be measured at least once per year.

Source of Evidence: Writing exam to assure certain proficiency level

Target:
Definition of success: At least 70% of the students taking this option will use PhD comprehensive exams that they have passed at least at the MS level, scoring "Satisfactory" or higher by all examiners.

Finding (2015-2016) - Target: Met

Four students took this option in this review cycle. Three out of the four (75%) received scores of "Satisfactory" or "Highly Satisfactory" at the PhD level (more stringent than MS level) by all examiners. One of them received a score of "Satisfactory" by 2 out of 3 examiners, and "Unsatisfactory" by one examiner at the PhD level.

Related Action Plans (by Established cycle, then alpha):

Continue monitoring and help transition to PhD where applicable

Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

SLO 3: Outcome 3: Demonstration of Understanding of Mathematical Theory

A candidate will demonstrate the ability to present non-trivial mathematical concepts, proofs, and examples, in a coherent, comprehensible, and correct manner.

Related Measures

M 1: Thesis Defense

Assessment Method for M.S. Students Choosing the Non-Thesis Option: The department will assign an advisory committee, including at least three mathematics graduate faulty members, to each student who is admitted to candidacy. This committee will prepare and administer a comprehensive written exam covering the candidate's coursework and also basic topics from standard areas including advanced calculus and linear algebra. The exam for a candidate with a non-thesis option will cover a larger collection of topics, determined by the candidate's coursework, than that for a thesis-option candidate. The committee will use the departmental rubric in evaluating a candidate's performance. Number of students assessed = 0 Assessment Method for M.S. Students Choosing the Thesis Option: The department will assign an advisory committee, including at least three mathematics graduate faculty members, to each student who is admitted to candidacy. This committee will prepare and administer a comprehensive written exam covering the candidate's coursework and also basic topics from standard areas including advanced calculus and linear algebra. The committee will use the departmental rubric in evaluating a candidate's performance. Number of students assessed = 0 Assessment Method For Students Who are Continuing to a PhD.: Samples of student work from class assignments, course exams,

or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. Number of students assessed = 0 Assessment Timeline All students taking comprehensive exams will be assessed. All outcomes will be measured at least once per year.

Source of Evidence: Senior thesis or culminating major project

Target:
Definition of success: more than half of the students taking this option will successfully defend their thesis and answer questions during the oral examination; successfully defending the thesis requires all examiners to score the student "Satisfactory" or better. Please note that very few students take this option.

Finding (2015-2016) - Target: Met
One student took the Thesis option during this review cycle. All three examiners scored him 4 (Highly Satisfactory) on the thesis defense.

Related Action Plans (by Established cycle, then alpha):

Continue monitoring and help transition to PhD where applicable

Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

M 2: MS Exams
Assessment Method for M.S. Students Choosing the Non-Thesis Option: Samples of student work from class assignments, exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. Number of students assessed = 2 Assessment Method for M.S. Students Choosing the Thesis Option: Samples of student work from class assignments, exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. In addition, the candidate's thesis will provide an assessment tool. Number of students assessed = 0 Assessment Method For Students Who are Continuing to a PhD.: A candidate is required to pass three written Ph.D. written comprehensive examinations, in a variety of content areas. Each exam is prepared and evaluated by a committee made up of at least three graduate faculty members who have expertise in that particular field. The committee follows a departmental rubric in evaluating the candidate's performance. These exams will provide adequate assessment for learning

outcomes 1 and 3. Number of students assessed = 2 Assessment Timeline Half of second-year graduate students will be assessed. All outcomes will be measured at least once per year.

Source of Evidence: Writing exam to assure certain proficiency level

Target:
A student taking the Non Thesis, MS Exam option is evaluated using the results of MS Exam presented. All of the ratings given in the exam should be "satisfactory" or above, using the Department's rubric for these exams. This should apply to all students taking this option.

Finding (2015-2016) - Target: Met
Three students took this option. All three passed the exam, with one student receiving two ratings of "Highly Satisfactory" and one "Satisfactory", while the other two received all three ratings as "Satisfactory". Target was met.

Related Action Plans (by Established cycle, then alpha):

Continue successful shepherding of students through MS degree
The MS Degree is meeting all of its goals; continued success requires continued effort on the part of faculty to help the students navigate the requirements successfully.

Established in Cycle: 2014-2015
Implementation Status: Finished
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Continue efforts to help students successfully complete their MS degrees. In the cases where the degree is not terminal, help the transition to the PhD degree
Projected Completion Date: 05/2016
Responsible Person/Group: Graduate Coordinator
Additional Resources: None

Continue monitoring and help transition to PhD where applicable
Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

M 3: Non Thesis/Non Exam option

Assessment Method for M.S. Students Choosing the Non-Thesis/Non Exam Option: The written comprehensive exam will provide an assessment tool for this outcome. All outcomes will be measured at least once per year.

Source of Evidence: Writing exam to assure certain proficiency level

Target:

A student taking the Non Thesis/Non Exam option is evaluated using the results of Written Comprehensive exams presented. At least 75% of the ratings given in each of the three exams should be "satisfactory" or above, using the Department's rubric for these exams. This should apply to all students taking this option.

Finding (2015-2016) - Target: Met

Four students took this option. Two of the students (50%) received a rating of "Satisfactory" or "Highly Satisfactory" from all examiners (100%) at the PhD level (and hence also at the MS level). One student received "Satisfactory" ratings from all examiners at the PhD level in two exams, and "Satisfactory" from all examiners at the MS level for one exam. One student received "Satisfactory" ratings from all examiners in two of the exams at the PhD level, and two "Satisfactory" and one "Unsatisfactory" at the PhD level in one exam; these correspond to 87% of ratings being "Satisfactory" or above. Target was met.

Related Action Plans (by Established cycle, then alpha):

Evaluation and tracking of goals

Using the forms and rubrics created for the purpose, Graduate Faculty assess students when they present Masters Exams, defend a Masters thesis, or obtain a Masters Degree in the non-thesis/non-exam option (open only for continuing PhD students who are successfully meeting the requirements for the PhD degree). Graduate Coordinator collects and collates the results. The Assessment Committee reviews adherence to and success in reaching the objectives.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
 Measure: MS Exams | **Outcome/Objective:** Outcome 2: Demonstration of Research Potential
 Measure: Non Thesis/Non Exam option | **Outcome/Objective:** Outcome 3: Demonstration of Understanding of Mathematical Theory
 Measure: Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge

Implementation Description: Graduate Coordinator distributes forms and rubrics to Graduate Faculty, who assess the students in the exams and presentations. Graduate Coordinator collects and collates results, and follows up in case the objectives are not met or weaknesses in the implementations are revealed.
Responsible Person/Group: Graduate Coordinator
Additional Resources: None

Continue monitoring and help transition to PhD where applicable

Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to

the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
| Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
Measure: Non Thesis/Non Exam option |
Outcome/Objective: Outcome 1: Demonstration of Content Knowledge
| Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
Measure: Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
| Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

Other Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

O/O 2: Outcome 2: Demonstration of Research Potential

A candidate will demonstrate research potential in obtaining mathematical solutions and proofs which are not readily available in the literature.

Related Measures

M 1: Thesis Defense
Assessment Method for M.S. Students Choosing the Non-Thesis Option: The department will assign an advisory committee, including at least three mathematics graduate faulty members, to each student who is admitted to candidacy. This committee will prepare and administer a comprehensive written exam covering the candidate's coursework and also basic topics from standard areas including advanced calculus and linear algebra. The exam for a candidate with a non-thesis option will cover a larger collection of topics, determined by the candidate's coursework, than that for a thesis-option candidate. The committee will use the departmental rubric in evaluating a candidate's performance. Number of students assessed = 0 Assessment Method for M.S. Students Choosing the Thesis Option: The department will assign an advisory committee, including at least three mathematics graduate faculty members, to each student who is admitted to candidacy. This committee will prepare and administer a comprehensive written exam covering the candidate's coursework and also basic topics from standard areas including advanced calculus and linear algebra. The committee will use the departmental rubric in evaluating a candidate's performance. Number of students assessed = 0 Assessment Method For Students Who are Continuing to a PhD.: Samples of student work from class assignments, course exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. Number of students assessed = 0 Assessment Timeline All students taking comprehensive exams will be assessed. All outcomes will be measured at least once per year.

Source of Evidence: Senior thesis or culminating major project

Target:

Definition of success: Half or more of the students presenting a thesis receive a score of "Satisfactory" or better by all examiners in the thesis defense. The thesis should includes either (i) original research; or (ii) a substantial survey of a mathematical topic.

Note that this option is taken by very few students.

Finding (2015-2016) - Target: Met

One student took the Thesis option during this review cycle. The student received a score of 4 (Highly Satisfactory) by all three examiners during the thesis defense.

Related Action Plans (by Established cycle, then alpha):

Continue monitoring and help transition to PhD where applicable

Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):

> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

M 2: MS Exams

Assessment Method for M.S. Students Choosing the Non-Thesis Option: Samples of student work from class assignments, exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. Number of students assessed = 2 Assessment Method for M.S. Students Choosing the Thesis Option: Samples of student work from class assignments, exams, or presentations will be evaluated by two or more graduate faculty members, using the departmental rubric. In addition, the candidate's thesis will provide an assessment tool. Number of students assessed = 0 Assessment Method For Students Who are Continuing to a PhD.: A candidate is required to pass three written Ph.D. written comprehensive examinations, in a variety of content areas. Each exam is prepared and evaluated by a committee made up of at least three graduate faculty members who have expertise in that particular field. The committee follows a departmental rubric in evaluating the candidate's performance. These exams will provide adequate assessment for learning outcomes 1 and 3. Number of students assessed = 2 Assessment Timeline Half of second-year graduate students will be assessed. All outcomes will be measured at least once per year.

Source of Evidence: Writing exam to assure certain proficiency level

Target:
Definition of Success For Non-Thesis: At least 70% of the students who choose the M.S. non-thesis option will be given a rating which is at least satisfactory in accordance with the departmental rubric.   Definition of Success for Thesis: At least 70% of the students who choose the M.S. thesis option will be given a rating which is at least satisfactory in accordance with the departmental rubric.   Definition of Success for Students Who Continue to a Ph.D: At least 70% of the students who attempt written Ph.D. comprehensive exams will be given a rating which is at least satisfactory in accordance with the departmental rubric.

Finding (2015-2016) - Target: Met
Three students took the non-thesis option this review cycle. All three passed their MS Exams. Two of them were scored "Satisfactory" by all examiners; one received two "Satisfactory" scores and one "Highly Satisfactory" course. 100% of the students passed the comprehensive exam.

Related Action Plans (by Established cycle, then alpha):

Evaluation and tracking of goals
Using the forms and rubrics created for the purpose, Graduate Faculty assess students when they present Masters Exams, defend a Masters thesis, or obtain a Masters Degree in the non-thesis/non-exam option (open only for continuing PhD students who are successfully meeting the requirements for the PhD degree). Graduate Coordinator collects and collates the results. The Assessment Committee reviews adherence to and success in reaching the objectives.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 2: Demonstration of Research Potential
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge

Implementation Description: Graduate Coordinator distributes forms and rubrics to Graduate Faculty, who assess the students in the exams and presentations. Graduate Coordinator collects and collates results, and follows up in case the objectives are not met or weaknesses in the implementations are revealed.
Responsible Person/Group: Graduate Coordinator
Additional Resources: None

Continue successful shepherding of students through MS degree
The MS Degree is meeting all of its goals; continued success requires continued effort on the part of faculty to help the students navigate the requirements successfully.

Established in Cycle: 2014-2015
Implementation Status: Finished
Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Continue efforts to help students successfully complete their MS degrees. In the cases where the degree is not terminal, help the transition to the PhD degree
Projected Completion Date: 05/2016
Responsible Person/Group: Graduate Coordinator
Additional Resources: None

Continue monitoring and help transition to PhD where applicable

Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
| Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
Measure: Non Thesis/Non Exam option |
Outcome/Objective: Outcome 1: Demonstration of Content Knowledge
| Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
Measure: Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
| Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

M 3: Non Thesis/Non Exam option
Assessment Method for M.S. Students Choosing the Non-Thesis/Non Exam Option: The written comprehensive exam will provide an assessment tool for this outcome. All outcomes will be measured at least once per year.

Source of Evidence: Writing exam to assure certain proficiency level

Target:
Definition of success: At least 70% of students taking this option will pass at least two of their three Comprehensive exams at the PhD level.

Finding (2015-2016) - Target: Met
Four students took this option in this report cycle. Two of them (50%) passed all three comprehensives at the PhD level. Two of them (50%) passed two of the three comprehensives at the PhD level, and passed the third one at the MS level.

Related Action Plans (by Established cycle, then alpha):

Continue monitoring and help transition to PhD where applicable
Continue to help students pursuing an MS degree as a terminal degree to finish on time (4-5 semesters). For students who will be transitioning to the PhD program, prepare them for the transition and to "hit the ground running" in the PhD program.

Established in Cycle: 2015-2016
Implementation Status: In-Progress

Priority: High

Relationships (Measure | Outcome/Objective):
> **Measure:** MS Exams | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Non Thesis/Non Exam option |
> **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory
> **Measure:** Thesis Defense | **Outcome/Objective:** Outcome 1: Demonstration of Content Knowledge
> | Outcome 2: Demonstration of Research Potential | Outcome 3: Demonstration of Understanding of Mathematical Theory

Implementation Description: Monitor student progress; advise as needed.
Projected Completion Date: 05/2017
Responsible Person/Group: Arturo Magidin
Additional Resources: None

Analysis Questions and Analysis Answers

How were assessment results shared and evaluated within the unit?
The results were summarized and reviewed at a meeting of the Graduate Faculty; the Graduate Coordinator also kept the Department Head informed on a more regular basis.

Identify which action plans [created in prior cycle(s)] were implemented in this current cycle. For each of these implemented plans, were there any measurable or perceivable effects? How, if at all, did the findings appear to be affected by the implemented action plan?
The Department is successfully shepherding students through the MS Program; this year there were several MS students who finished the program (as opposed to continuing PhD students who obtain an MS degree along the way towards their PhD). They all finished on time and received Satisfactory or Highly Satisfactory ratings. Given the Department's past and continuing success, there were no specific action plans created in previous years.

What has the unit learned from the current assessment cycle? What is working well, and what is working less well in achieving desired outcomes?
The current cycle included the first MS thesis in many years; this proved a learning experience for the Graduate Coordinator. The thesis was successfully completed and defended on time; it was important, however, to stay on top of the project to ensure timely completion.

The MS exams and the PhD exams seem to be working well, and the courses are preparing the students for these examinations. There is better uniformity of outcomes, with no student scoring below "Satisfactory" in any exam by any examiner.

However, the lack of outstanding performances is something that merits continuing attention.