UNIT REPORT

Mathematics MS
Assessment Plan Summary

Mathematics MS

Develop Consistent and Stable Cohort Size

Goal Description:

A fall cohort of ten supported graduate students allows us to maintain a healthy program with consistent class sizes, class schedules and graduation rates above 7 students per year.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Focus On Fall Cohorts

Learning Objective Description:

We will focus on strong Fall term cohorts of 10 students. We will rarely allow students to enter during the Spring term. Students will not be allowed to enter in the Summer term.

RELATED ITEM LEVEL 1

Support Ten New Students Each Year

Performance Objective Description:

We will support ten new graduate students each year, as many as twenty in the two years of our program. Support should be such that full time students are supported by at least $10,000 more than the cost of tuition and fees.

During 2016, we brought in nine new graduate students, just one short of our goal.

RELATED ITEM LEVEL 2

Expand size of program

KPI Description:

We'd like to be able to accept 10 new students each year.... this would allow us to offer several different 2nd year elective courses for MS-Math students: some for applied mathematicians, something for pure mathematicians.

Results Description:

With the phase-out of PEERS (which funded 3-4 TA positions each year) this goal has proven difficult to meet. We struggle to find 7 new graduate students each Fall semester.

RELATED ITEM LEVEL 3

Improving and Updating the MS-Math program

Action Description:

A new MS-Math coordinator will result in a fresh perspective in growing our MS program. Attracting more domestic students will result in fewer students who have a higher financial burden on international students who are required to pay for health insurance (these costs increase dramatically each year).

Develop Research Skills

Goal Description:

Students who choose to complete a thesis will develop research skills

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Demonstrate Graduate-Level Research Skills

Learning Objective Description:

Students completing the MS with a thesis will demonstrate skills in completing original research.

RELATED ITEM LEVEL 2

Thesis Defense Rubric

Indicator Description:

The attached rubric will be used to rate student research during the thesis defense.

Criterion Description:

MS students choosing to complete a thesis will score either a "fail", "pass" or "high pass" on their thesis based on the given rubric.

Findings Description:

Unfortunately, no MS-Math students have chosen to complete the thesis option since 2014. When a student completes a thesis, we will evaluate the performance of our grading rubric.

RELATED ITEM LEVEL 1

Participation In Colloquia

Learning Objective Description:

Faculty will hold a regular colloquium series and graduate students will be encouraged to participate in that series.

RELATED ITEM LEVEL 2

Consistent Colloquium Series

Indicator Description:

The Faculty Colloquium series will have 3 or more meetings per month. One or more talks during the school year in the colloquium series will be given by graduate students. At least half of the graduate students will attend that colloquium on a regular basis.

Findings Description:

Our department colloquium is currently held every other week during the Fall and Spring semesters, and typically one of those talks is a presentation by a current graduate student. All of our graduate TAs are now required to attend all of these colloquia.

Emphasize Written Communication Skills

Goal Description:

The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area of study.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Communicating Mathematical Ideas-Written

Learning Objective Description:

Students will be able to write rigorous proofs of mathematical statements, read mathematical research manuscripts, write formal mathematical papers, and use critical thinking skills to solve research problems.

RELATED ITEM LEVEL 2

Comprehensive Examination

Indicator Description:

Students in the MS program will take a written comprehensive examination in the areas of abstract algebra and analysis. The examination will be scored by a committee of faculty.

Criterion Description:

At least two-thirds of our students will pass their comprehensive examinations on their first attempt.

Findings Description:

At the end of the 2015-16 academic year, 80% of our graduate students that completed our core sequences in algebra and analysis and attempted the comprehensive examinations for these areas were able to successfully pass both exams on their first attempt.

RELATED ITEM LEVEL 1

Conversation On Teaching

Learning Objective Description:

Graduate faculty and graduate students will regularly discuss the teaching profession.

RELATED ITEM LEVEL 2

Teaching Seminar

Indicator Description:

Graduate faculty will lead a teaching seminar with participation from graduate students. This seminar will meet at least monthly.

Findings Description:

The graduate teaching seminar was initiated during the Fall 2014 semester and continues to meet once per month during the Fall and Spring semesters.

RELATED ITEM LEVEL 1

Students Will Be Proficient At LaTeX

Learning Objective Description:

Graduate students will become proficient in the use of LaTeX for mathematical writing.

RELATED ITEM LEVEL 2

LaTeX Intensive Courses

Indicator Description:

At least one course per semester in our MS-Math program will require LaTeX to be used in the submission of homework assignments. Whenever possible, these submissions will be accepted online using Blackboard.

Criterion Description:

LaTeX is important for mathematicians to know. Being proficient in this programming language can be difficult to learn, but using class assignments can be used as an effective LaTeX teaching tool.

Findings Description:

All students were required to turn in homework assignments in the core graduate course Real Analysis I and II. This guaranteed proficiency in LaTeX.

Improve Graduate Student Environment

Goal Description:

We will increase and improve the graduate student environment, including office space and quality of office space, desks, tutoring area.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Increased Office Space

Performance Objective Description:

We will increase office space to comfortably handle 20 MS-Math students, each with their own desk and access to personal file cabinets.

Our current office space can currently handle 18 MS-Math students, each with their own desk and personal file cabinet.

RELATED ITEM LEVEL 2

More office space

KPI Description:

We need more office space for TAs and adjunct instructors.

Results Description:

We took an office on the first floor of LDB, and added three desks for three TAs. We remodeled the TA office to increase capacity by more than 5 TAs. This is allowing us to house all graduate teaching assistants comfortably, and hope something else comes available by the time we grow beyond this space capacity.

RELATED ITEM LEVEL 3

Improving and Updating the MS-Math program

Action Description:

A new MS-Math coordinator will result in a fresh perspective in growing our MS program. Attracting more domestic students will result in fewer students who have a higher financial burden on international students who are required to pay for health insurance (these costs increase dramatically each year).

Improve Graduate Student Support

Goal Description:

We will increase graduate student support so that our program attacts good students who can study fulltime.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Graduate Assistants Should Not Need A Second (Outside) Job

Performance Objective Description:

We will increase graduate student support so that students in the program, including international students, can earn $1000/mo over tuition and fees. This will eliminate the need for our teaching assistant grad students to take a second outside job. (A second job + TA + 3 classes is difficult for domestic students and is illegal for international students.)

Improve Instruction By TAs

Goal Description:

We will improve our instructional support for TA instruction in 1000-level classrooms.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Conversation On Teaching

Learning Objective Description:

Graduate faculty and graduate students will regularly discuss the teaching profession.

RELATED ITEM LEVEL 2

Teaching Seminar

Indicator Description:

Graduate faculty will lead a teaching seminar with participation from graduate students. This seminar will meet at least monthly.

Findings Description:

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RELATED ITEM LEVEL 1

Participation In Colloquia

Learning Objective Description:

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Indicator Description:

The Faculty Colloquium series will have 3 or more meetings per month. One or more talks during the school year in the colloquium series will be given by graduate students. At least half of the graduate students will attend that colloquium on a regular basis.

Findings Description:

Our department colloquium is currently held every other week during the Fall and Spring semesters, and typically one of those talks is a presentation by a current graduate student. All of our graduate TAs are now required to attend all of these colloquia.

RELATED ITEM LEVEL 1

Mentoring Of 1000-level Instructors

Performance Objective Description:

We will actively mentor graduate students teaching 1000-level classes.

Each graduate student that teaches a 1000-level course is now paired with a tenured faculty member who either is teaching the same course or has recently taught that course. This faculty member serves as a teaching mentor for the student throughout the semester.

RELATED ITEM LEVEL 2

Stable teaching load

KPI Description:

We have standardized our workload for new TAs.... Their first year is spent helping with developmental courses, plus grading or being a teaching assistant for a faculty member. The second year is spent teaching at least one credit-bearing course with a faculty mentor offering assistance and advice.

Results Description:

Teaching load is now standardized.

RELATED ITEM LEVEL 1

Stable Teaching Program

Performance Objective Description:

We will develop a consistent and stable teaching schedule and program for TAs teaching 1000 level classes.

We are currently assigning each TA who has earned at least 18 hours of graduate credit a teaching assignment of one 1000 level course per semester.

RELATED ITEM LEVEL 2

Stable teaching load

KPI Description:

We have standardized our workload for new TAs.... Their first year is spent helping with developmental courses, plus grading or being a teaching assistant for a faculty member. The second year is spent teaching at least one credit-bearing course with a faculty mentor offering assistance and advice.

Results Description:

Teaching load is now standardized.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify):

Current stipends and assistantships mean that many international applicants (approx 20/year) do not enter the program and some that come do not stay. International students are poorly supported by the campus. Meanwhile many domestic applicants have poor math preparation and struggle in the program.
(3 of 9 Fall 2015 grad new assistants either did not arrive in August or left shortly after classes began.)

We need to increase domestic recruiting of local students (Houston, SHSU) and see if we can build a domestic cohort while still recruiting a few students from pipeline countries like Sri Lanka.

We need the university to implement a tuition waiver for high quality, personally recruited minority students.

We need to begin a Bachelors+Masters 5 year program that will move some of our good math undergraduates into our program in a seamless manner.

Update of Progress to the Previous Cycle's PCI:

Since stipends for our graduate teaching assistants have not increased, this year we continued to lose many high quality applicants (especially international students) to other graduate programs in Texas. Moreover, one applicant that accepted our offer did not actually arrive for the Fall semester.

Our new cohort of graduate students does include more domestic students that recently graduated from nearby universities than in previous years and we hope to continue this trend by actively recruiting from campuses like those they came from. We continue to have strong applicants from countries like Sri Lanka and Nigeria.

We were able to use the PEERS scholarship to recruit a minority student from a local Historically Black College, but since this program expires at the end of the current year it will be essential to find a new source of scholarship money in order to continue our success in this area.

Finally, a committee has assembled a preliminary plan for a 5 year BS+MS program that will be proposed.

Changing leadership in MS-Math

Closing Summary:

We are happy with the growth we've seen in the MS-Math program. We have 7 new students each year (5 are needed to sustain a program) but would like 10. We have made sure our students get enough research experience and LaTeX exposure. We need to rely less on international students and less on external (federal) funding.