UNIT REPORT

Mathematics BA/BS - Assessment Plan Summary

Mathematics BA/BS

Deliver A Lower-Level Curriculum With Appropriate Discipline Specific Skill Sets

Goal Description:

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

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Foundation Areas - Differential Calculus

Learning Objective Description:

MATH 1420 (Calculus I): Students will demonstrate the following knowledge and skills: differentiation of standard mathematical functions, application of the Fundamental Theorem of Calculus to the evaluation of integrals, and using calculus techniques to solve optimization problems.

RELATED ITEM LEVEL 2

Course Assessment - MATH 1420

Indicator Description:

All students enrolled in the program are required to complete Mth 142. Students will be administered a final exam developed and approved by the department faculty. The exam will require them to demonstrate the knowledge and skills mentioned in the objective.

Criterion Description:

Common questions on final exams were used to assess student understanding of core concepts from the course. Historically, results were not useful. This criterion is no longer in use.

Findings Description:

Data collected was not useful to the department. Another course assessment is in process of being developed.

RELATED ITEM LEVEL 3

New plan for assessment of student success in calculus

Action Description:

Performance on common questions on final exams gave no valuable information. Instead we should be examining performance in subsequent courses (Calc II, for example) or DFW rates as related to retention of STEM majors.

A plan will be developed over the 2017-2018 academic year.

Deliver An Upper-Level Curriculum With Appropriate Discipline Specific Knowledge

Goal Description:

The curriculum will address the discipline specific knowledge dictated by professional societies and/or professionals in the workforce for upper-level instruction in mathematics.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Advanced Areas For Majors

Learning Objective Description:

Students preparing to graduate will demonstrate advanced mathematics knowledge and skills.

RELATED ITEM LEVEL 2

Euclidean Geometry Project - Math3363

Indicator Description:

Students will complete a project on the role of proof and technology in communicating mathematics.

Criterion Description:

At the end of the semester, 70% of the students submitting their project will receive a rating of 8 out of 10 or better according to the attached rubric.

Findings Description:

More than 70% of the students in MATH 3363 earned 80% or more of the points available in the geometry project.

RELATED ITEM LEVEL 3

Continue to use active learning in 3363

Action Description:

Because of the success we have seen in this course (which is mandatory for all future secondary math teachers) we will continue to use active learning in this course, MATH 3363. The nature of the material (Euclidean geometry) makes it a natural fit with active learning, increasing student capacity for reading and writing mathematical proofs.

Improve Communication Between Department And Its Majors

Goal Description:

Communicate to our mathematics majors more and better information pertaining to internships, research opportunities, scholarships. etc.

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Improve Communication Between Department And Mathematics Majors

Performance Objective Description:

Communicate to our mathematics majors more and better information pertaining to internships, research opportunities, scholarships. etc.

RELATED ITEM LEVEL 2

Annual meeting with all math majors

KPI Description:

In each late Fall semester, a meeting will be held, hosted by the department chair. All mathematics majors will be invited. This one hour meeting will include an introduction of all faculty in the department (via projected slides), a description of some of the research areas in the department (particularly those that have involved students), and a list of opportunities available to our majors.

These opportunities might involve departmental scholarships and awards, employment opportunities, and conferences available for travel. In addition, we will describe REUs (those both local and external) to the students and encourage students to apply.

The purposes of these meetings are (1.) to inform students of opportunities in the department, (2.) to recruit math majors into our stat minor program, and (3.) to foster a sense of belonging in the department of each one of our mathematics majors.

Results Description:

This meeting has increased the number of applications to REU programs and the number of students accepted. This year, K. Tademy was accepted into an REU run by UTEP and Kansas State (or was it UK?)

RELATED ITEM LEVEL 3

New chair, new communication

Action Description:

The department will have a new chair in Fall 2017, and she may have new ideas for improving communication between students and faculty.

One challenge will be to recruit students for our new 5-year BS/MS program in mathematics (and presumably later in statistics).

Update to Previous Cycle's Plan for Continuous Improvement

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

The first course any student takes in the BS/BA degree plans is differential calculus (MATH 1420). It is the first encounter we have with our math majors and minors. There are several ways for a student to satisfy prerequisites for this course: MATH 1410 (here), MATH 1314+1316 (here), MATH 1314+1316+2314 (at 2-yr school), high school calculus.... we don't have a firm understanding of how well students are prepared for calculus, and which pathways are or are not effective. We hired a Lecturer (in a 2-year probationary role) to assess these calculus prerequisite pathways. Spring and Summer 2017 will be spent collecting and analyzing data on performance in 1420 based on type of prerequisite obtained. This will be very useful in assessing our precalculus courses.

Update of Progress to the Previous Cycle's PCI:

We were successful in opening additional sections of MATH 2440, MATH 4361, and MATH 3377 thanks to the new position we were granted. This has helped relieve some of the pressure on large, upper-level math courses for majors.

Plans for the future, recruiting for a new 5-year BS/MS program

Closing Summary:

Plans for the future will be centered around recruiting students for a soon-to-be-approved 5-year BS/MS program. This could help recruit stronger students from "better" high schools, allowing us to compete with A&M, TxTech, UNT, UH, etc.

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