Mathematics BA/BS

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.

Providing Department: Mathematics BA/BS

Progress: Ongoing

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 (BA) - Math 3363 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 60 or better (out of 75) according to the attached rubric.

Attached Files

Project description and rubric

Findings Description:

The criterion for this learning objective has been met for multiple years. Mathematics area faculty will consider revising this objective.

RELATED ITEM LEVEL 3

Euclidean Geometry Projects (BA) - Math 3363

Action Description:

The criterion for LO1 has been met for multiple years. Mathematics area faculty will consider revising this objective.

RELATED ITEM LEVEL 2

Introduction to Math Thought portfolio (BS) - Math 3300

Indicator Description:

Students will demonstrate the ability to write direct proofs, proofs by contrapositive, proofs by contradiction, proofs by induction, and proofs by cases.

Criterion Description:

At the end of the semester, students will turn in a portfolio of rewritten past work (or similar) that demonstrates their ability to write each of the five types of proofs listed above. At least 70% of students who turn in portfolios will earn a combined average of at least 75% on these five types of proof in their portfolios.

Findings Description:

Portfolios were not used this academic year. Thus this was not assessed.

RELATED ITEM LEVEL 3

Introduction to Math Thought portfolio (BS) - Math 3300

Action Description:

The Math Area shall revisit the use of portfolios in MATH 3300.

RELATED ITEM LEVEL 2

Undergraduate Research Project (BS) - Math 4395

Indicator Description:

Undergraduate math majors will enroll in Math 4395 in which students perform a semester-long research project (along with discipline-specific professional development activities) with a faculty mentor.

Criterion Description:

At least 10% of our undergraduate math majors per year will enroll in Math 4395 and complete a research project with a faculty mentor.

Findings Description:

This target was not met. The indicator says students will enroll in this course, though it is not a requirement for a math degree.

RELATED ITEM LEVEL 3

Undergraduate Research Project (BS) - Math 4395 Action Description:

The future of associated indicator will be reviewed by the Math program area.

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.

Providing Department: Mathematics BA/BS

Progress: Ongoing

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 math majors and social media outreach

KPI Description:

Each academic year, 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.

Target Description:

Successful completion of this KPI would result in one meeting per academic year.

Results Description:

This target was not met due to a number of factors. The department chair was new and had many other urgent matters that took priority including staffing of classes, student complaints (proportional to number SCHs - plus it is math), non-TSI complete student issues, FES, tenure and promotion (the math/stat faculty is large), immigration & residency sponsorship, assessment, scheduling of classes, etc. We were also short a staff member in the spring A majors meeting is being planned for fall 2024.

RELATED ITEM LEVEL 3

Annual meeting with all math majors and social media outreach

Action Description:

The department chair and office staff are planning for a meeting of math major in Fall 2024.

Increase student success and academic preparation in Math 1420 and Math 1430.

Goal Description:

Improve attrition rates in the calculus sequence.

Providing Department: Mathematics BA/BS

Progress: Ongoing

RELATED ITEMS/ELEMENTS ------

RELATED ITEM LEVEL 1

Foundation Areas - Differential Calculus Learning Objective Description:

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, a broad understanding of integration techniques, using calculus techniques to solve optimization problems, and convergence properties of infinite sequences and series.

RELATED ITEM LEVEL 2

Assessment in Math 1420 and Math 1430 Indicator Description:

Create assessment portfolios that can be used in active learning sections of Calculus I and Calculus II to better align the way that we assess our students in these courses.

Criterion Description:

Active learning in Math 1420 and Math 1430 will use a wide variety of assessment strategies which may include group and individual projects, informal student presentations, exams with group and individual portions, techniques from mastery-based assessment, and more. In particular, each learning objective will correspond to multiple items in the assessment portfolio to provide a broad picture about student mastery or proficiency

Findings Description:

This item ended up not being assessed this academic year.

RELATED ITEM LEVEL 3

Assessment in Math 1420 and Math 1430 Action Description:

The indicator "Create assessment portfolios that can be used in active learning sections of Calculus I and Calculus II to better align the way that we assess our students in these courses" was not assessed and will be reviewed by the Math program area for future use.

Update to Previous Cycle's Plan for Continuous Improvement Item

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

Closing Summary

The indicator descriptions for both Math 3300 and Math 1420/1420 are appropriate, however the criteria are not applicable as they do not actually describe current practices. In Math 1420/1430, the math area will need to determine how to better assess the overall performance of our students rather than using portfolios since it appears that these are not being used by most instructors. One idea is to give all of our students a few common final exam questions that address some of the core learning objectives and which would be given to all students in all courses. This would provide us a data set that could help to elucidate overall student performance. Because the assessment portfolios are also not being administered in Math 3300, we will need to update our criteria to better reflect assessment practices in this area.

We will continue to look for and pursue effective means of communicating with our students.

Update of Progress to the Previous Cycle's PCI:

The department struggled to address the issues raised in the Previous Cycle's PCI. This was due to frequent turnover in department leadership, and new leadership being unfamiliar with assessment timelines and reporting norms. Moreover, faculty are stretched thin for time and attention, especially since there appears to be an increase in the amount of attention and support that faculty need to provide students in and outside of the classroom. The department can, again, make an effort to better assess MATH 3300, 1420 and 1430 by first determining how to better assess the overall performance of our students, potentially through the use of a few common final exam questions in 1420/1430, and by updating our criteria for MATH 3300 to better reflect assessment practices in this area.

With regards to better communication with our majors, Campus Connect was used by the department to reach out to students regarding things that are relevant to their degree program.

New Plan for Continuous Improvement Item

Closing Summary:

The department will, again, make an effort to better assess MATH 3300, 1420 and 1430 by first determining how to better assess the overall performance of our students, potentially through the use of a few common final exam questions in 1420/1430, and by updating our criteria for MATH 3300 to better reflect assessment practices in this area.

The department will create a new committee who's charge is to produce a plan for recruitment and retention of students in the BA/BS. This committee will help with the planning of Saturday@Sam, Preview@Sam, the Majors Fair, etc. The committee will also assist in hosting a majors meeting for current or potentially interested BS/BA students.

The department chair will seek opportunities to build outside relationships with potential employers and /or donors.