Mathematics MA

Deliver A Curriculum With Appropriate Discipline Specific Knowledge

Goal Description:

The MA program prepares students to teach undergraduate mathematics at the community college level, to teach dual credit or AP courses at the high school level, and/or to pursue further education at the doctoral level in mathematics education. The curriculum will address the discipline specific knowledge as dictated by professional societies (e.g., the American Mathematical Society (AMS), the Mathematical Association of America (MAA), the American Educational Research Association (AERA), the National Council of Teachers of Mathematics (NCTM), and the Association of Mathematics Teacher Educators (AMTE)) and/or professionals in the workforce (e.g., local community colleges (such as Lone Star and Blinn), Texas legislative mandates, and the Texas Education Agency (TEA)). Specifically, MA students will successfully complete:

- 4 core area courses (Algebra, Geometry, Analysis, and Probability/Statistics)
- an oral comprehensive exam covering the 4 core area courses
- an individualized mathematics education related capstone experience resulting in a specific completed product that could be used as part of an application to a doctoral program
- a minimum of 18 credits of pure MATH courses without any reference to "for teachers" in either the title or description of the course
- a pedagogical issues in undergraduate mathematics education course

Providing Department: Mathematics MA

Progress: Completed

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Understanding Mathematical Structures

Learning Objective Description:

Students will prove theorems, solve problems and/or explain concepts in the following core areas

- abstract algebra structures such as groups, rings, fields, functions, homomorphisms, and isomorphisms.
- differential and integral calculus
- probability and statistics, particularly inferential statistics, and
- transformational geometry to include isometrics and non-isometric transformations such as circles of inversion.

Students will demonstrate their knowledge, skills, and abilities in these core areas by earned B's or higher in each course and passing a comprehensive oral examination.

Students will further complete a minimum of 18 credit hours of MATH coursework without "for teachers" in either the title or description of the course.

RELATED ITEM LEVEL 2

MA Comprehensive Oral Examination

Indicator Description:

Students in the MA program will take an oral examination over the four areas covered in the objective. The oral examination will be scored by a committee of faculty using a rubric developed and approved by department faculty.

Criterion Description:

100% of the MA students will receive a grade of "Pass" or "High Pass" on each of the four areas according to the attached rubric.

Attached Files

Grading Scheme for MA Orals.pdf

Findings Description:

During the 2022-23 assessment cycle, 8 students attempted and passed their oral comprehensive exams as follows:

Algebra: Pass (6 with one needing a retake); High Pass (2)

Geometry: Pass (6 with three needing a retake); High Pass (2)

Analysis: Pass (6 with zero needing a retake); High Pass (2)

Probability and Statistics (7 with zero needing a retake); High Pass (1)

RELATED ITEM LEVEL 3

MA Comprehensive Oral Examination Action

Action Description:

During the 2023-24 cycle, data similar to that collected last year will be collected. This data will then be used to evaluate how to improve CORE courses to reduce retake rates and increase High Pass rates.

RELATED ITEM LEVEL 2

Successful completion of 4 core courses

Indicator Description:

Students in the MA program will successfully complete MATH 5386 (Concepts in Modern Algebra), MATH 5387 (Concepts in Transformational Geometry), MATH 5388 (Concepts in Analysis), and MATH 5389 (Concepts in Probability and Statistics).

Criterion Description:

100% of the MA student will earn B's or higher in all four core courses.

Findings Description:

During the 2022-23 cycle, the following CORE courses were offered with the included results:

Fall 22: MATH 5386 Concepts in Modern Algebra; Enrollment: 17

1. Grade of A (15)
2. Grade of B (2)

Spring 23: MATH 5386 Transformational Geometry; Enrollment: 16

1. Grade of A (10)
2. Grade of B (5)
3. Grade of C (1)

RELATED ITEM LEVEL 3

Successful completion of 4 core courses Action

Action Description:

During the 2023-24 cycle, data similar to that collected for MATH 5386 and MATH 5387 during the last year will be collected for MATH 5388 and MATH 5387. Pass rate data will then be used to evaluate ways to improve CORE courses.

RELATED ITEM LEVEL 2

Successful completion of pure math and pedagogical issues coursework

Indicator Description:

Students in the MA program will complete a minimum of 18 credit hours of MATH coursework without "for teachers" in the title or description and a pedagogical issues in undergraduate mathematics education course.

Criterion Description:

100% of the MA students will earn an overall GPA of 3.0 or higher in all their coursework.

Findings Description:

During the 2022-23 cycle MA students enrolled in the following courses:

Summer 2022:

1. MATH 5360 Advanced Mathematical Problem Solving (12)
2. MATH 5360 Quantitative Research in Education (12)
3. CIED 6394 Developing Curriculum for Adults (1)
4. CIED 5333 Professional Educator's Role (2)
5. CIED 5390 Advanced Methods of Classroom Management and Discipline (1)

Fall 2022:

1. MATH 5386 Concepts in Modern Algebra (17)
2. MATH 6381 Advanced Connections in Algebra, Trigonometry, and Combinatorics (12)
3. CIED 5333 Professional Educator's Role (1)

Spring 2023:

1. MATH 5387 Transformational Geometry (16)
2. MATH 5397 Discrete Math (7)
3. CIED 6394 Developing Curriculum for Adults (1)
4. CIED 5340 Foundations of US Education Curriculum and Instruction (1)
5. CIED 5383 Integrating Current Technology in Teaching (1)
6. CIED 5397 Human Growth and Development Across the Lifespan(1)
7. CIED 5390 Advanced Methods of Classroom Management and Discipline (1)

RELATED ITEM LEVEL 3

Successful completion of pure math and pedagogical issues coursework Action

Action Description:

During the 2023-24 cycle similar data as 2022-23 will be collected on course enrollment of MA students to understand enrollment patterns and improve course offerings.

RELATED ITEM LEVEL 1

Develop 100% Online MA Program

Performance Objective Description:

Students are required to have a minimum of 18 credit hours of MATH coursework without "for teachers" in the title or course description. As such, the program needs a variety of elective courses offered every semester. The program has yet to have full slate of permanent electives available to provide students the optimal opportunity to meet the learning objective for the program. As such, the MA advisor will work on transitioning Special Topics Courses to regularly offered elective courses that fit the criteria for the program.

RELATED ITEM LEVEL 2

Submit Form B's to turn special topics courses into permanent courses

KPI Description:

In order to have enough elective MATH courses for students in the MA program to have the optimal opportunity to take a minimum of 18 MATH credit hours without "for teachers' in the title or course description, a Form B for Concepts in Quantitative Research Methods which was taught as a Special Topics course in Summer 2022 needs to be submitted through the proper channels to be approved.

Target Description:

By Summer 2023, the Form B for MATH 6385 will be submitted for the University Curriculum Committee's approval.

Results Description:

As of the date of this report, the Form B for MATH 5385 has not been submitted. It will be submitted over Summer 2023.

RELATED ITEM LEVEL 3

Submit Form B's to turn special topics courses into permanent courses Action

Action Description:

The MATH 6385 Form B will be submitted during Summer 2023 and will go through the college and university processes to be included in future course catalogs.

RELATED ITEM LEVEL 1

Program Evaluation

Performance Objective Description:

In order to assess the effectiveness of the MA program learning goals with respect to student learning, faculty will work together to develop a plan to be able to evaluate the effectiveness of the assessment measures of the Mathematics MA program.

RELATED ITEM LEVEL 2

Alumni Formal Assessments of MA Program

KPI Description:

In order to better evaluate the effectiveness of the MA program, it would be helpful to get regular feedback from alumni as to the impact of their participation in the MA program on their career goals. In order to facilitate this, the graduate advisor will create and update two SHSU MA Alumni email lists. One will be of SHSU emails and one will be of personal emails collected as students graduate. Over time this should allow program administrators to effectively contact alumni for program evaluation purposes.

The MA graduate coordinator will create and manage the two email distribution lists with initial creation and population of both lists by Spring 2022.

Target Description:

The MA graduate coordinator will manage and update the two email distribution lists at the end of every semester/term in order to gradually collect current alumni contact information.

Results Description:

The two email distribution lists was managed and updated at the end of each semester/term. There are now 10 current email addresses for alumni graduating between Fall 21 and Spring 23. The current 24 student are also updated as of Summer 23.

RELATED ITEM LEVEL 3

Alumni Formal Assessments of MA Program Action

Action Description:

Moving into the 2023-24 cycle, the MA graduate coordinator will continue to manage and update the two email distribution lists at the end of every semester/term. The alumni list will also be used as part of departmental strategic planning.

RELATED ITEM LEVEL 1

Refine and implement an effective marketing strategy to increase enrollment

Performance Objective Description:

During the 2022-2023 academic year, we will continue to refine and implement the marketing plan developed during the 2021-22 academic year for the 100% online MA program in order to continue to increase enrollment to the desired amount of 30 students in any given semester.

RELATED ITEM LEVEL 2

Implement Marketing Plan

KPI Description:

By the end of Spring 2023, we will have begun to implement the revised Math MA marketing plan.

We will specifically ensure the MA websites are prepared to optimize search engine's abilities to find us. We will continue to target potential students using a combination of 80% search engine optimization and 20% social media advertisement based on on our initial funding. Funding will be sought for two campaigns a year rather than one.

(in Fall 2023 we will evaluate the effectiveness of our plan by obtaining data on the number of positive search engine searches, the number of social media clicks, and the number of inquiries and applications for the Math MA program compared to Fall 2022.)

Target Description:

By December 2022, the marketing team will meet to assess the effectiveness of the optimization plans from the previous campaign. By January 2023, funding will be sought via the department, the graduate school, SHSU online, and the dean's office to fund two marketing campaigns a year, rather than just one.

Results Description:

The marketing team met all deadlines for assessing the effectiveness of the optimization plans from the previous campaign. Funding was procured from the department, the graduate school, SHSU online, and the dean's office ($5500 in total) to fun one marketing campaign in the Spring 2023 semester.

RELATED ITEM LEVEL 3

Implement Marketing Plan Action

Action Description:

By December of 2023, the graduate advisor for the MA program will meet with SHSU marketing to refine the marketing plan based on the 2022-23 results and meet with the chair of the math/stats department, the dean of COSET, and the dean of the Graduate School to solicit funding to support the refined marketing plan.

By January 2024 there will be:

1. a refined marketing plan for the MA program
2. at least 2 meetings with SHSU marketing
3. at least one meeting with the chair of the MATH/STAT department to solicit department funding
4. at least one meeting with the dean of the COSET to solicit college funding
5. at least one meeting with SHSU online to solicit additional funding
6. at least one meeting with the dean of the Graduate School to solicit additional funding

RELATED ITEM LEVEL 2

Refine marketing plan for the 100% online MA program

KPI Description:

By December of 2022, the graduate advisor for the MA program will meet with SHSU marketing to refine the marketing plan based on the 2021-22 results and meet with the chair of the math/stats department, the dean of COSET, and the dean of the Graduate School to solicit funding to support the refined marketing plan.

By January 2023 there will be:

1. a refined marketing plan for the MA program
2. at least 2 meetings with SHSU marketing
3. at least one meeting with the chair of the MATH/STAT department to solicit department funding
4. at least one meeting with the dean of the COSET to solicit college funding
5. at least one meeting with SHSU online to solicit additional funding
6. at least one meeting with the dean of the Graduate School to solicit additional funding

Target Description:

By January 2023 there will be:

1. a refined marketing plan for the MA program
2. at least 2 meetings with SHSU marketing
3. at least one meeting with the chair of the MATH/STAT department to solicit department funding
4. at least one meeting with the dean of the COSET to solicit college funding
5. at least one meeting with SHSU online to solicit additional funding
6. at least one meeting with the dean of the Graduate School to solicit additional funding

Results Description:

The marketing team met all deadlines for assessing the effectiveness of the optimization plans from the previous campaign. Funding was procured from the department, the graduate school, SHSU online, and the dean's office ($5500 in total) to fun one marketing campaign in the Spring 2023 semester.

RELATED ITEM LEVEL 3

Refine marketing plan for the 100% online MA program Action

Action Description:

By December of 2023, the graduate advisor for the MA program will meet with SHSU marketing to refine the marketing plan based on the 2022-23 results and meet with the chair of the math/stats department, the dean of COSET, and the dean of the Graduate School to solicit funding to support the refined marketing plan.

By January 2024 there will be:

1. a refined marketing plan for the MA program
2. at least 2 meetings with SHSU marketing
3. at least one meeting with the chair of the MATH/STAT department to solicit department funding
4. at least one meeting with the dean of the COSET to solicit college funding
5. at least one meeting with SHSU online to solicit additional funding
6. at least one meeting with the dean of the Graduate School to solicit additional funding

Develop Research Skills

Goal Description:

Students will develop research skills commensurate with graduate student status and that could be relevant to their future teaching careers.

Providing Department: Mathematics MA

Progress: Completed

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Demonstrate Research Skills

Learning Objective Description:

Students completing the MA in Mathematics will demonstrate mathematics education research skills by successfully completing an individualized capstone project in Math 5380 with an advisor. They will demonstrate their acquired knowledge, skills, and abilities from throughout the program through at least two of the following:

- Earning a B or higher in the course.
- Submitting a conference proposal to present their project results.
- Submitting a paper on the results of their project for publication in either a practitioner or research focused journal geared towards graduate student research.
- Creating and utilizing curriculum materials (text, technological applications, and/or media) developed through their project.
- Reflecting in writing on the research process and its applicability to their future career goals.
- Using their capstone experience to help them apply for further education at the doctoral level.

RELATED ITEM LEVEL 2

Research Project Assessment

Indicator Description:

MA students complete an independent mathematics education research project. The student works with a supervising professor who oversees and evaluates the work required of the student. A grade is assigned based on the individual requirements set forth by the supervising professor. In addition al least one written product will result from the project.

Criterion Description:

Students will be rated at least 80% on the project rubric. Each student will be evaluated on an individualized rubric by their supervising professor.

At least one of the following written products will result from the project:

- Submitting a conference proposal to present their project results.
- Submitting a paper on the results of their project for publication in either a practitioner or research focused journal geared towards graduate student research.
- Creating and utilizing curriculum materials (text, technological applications, and/or media) developed through their project.
- Reflecting in writing on the research process and its applicability to their future career goals.
- Using their capstone experience to help them apply for further education at the doctoral level.

Findings Description:

During Summer 2022, 4 students completed an independent mathematics education research project. 3 students submitted a conference proposal and presented on their project's results. 1 created and utilized curriculum materials developed through their projects. 1 used their capstone experience to help them apply for further education at the doctoral level and was accepted at the University of Wyoming. All passed MATH 5380 with A's.

During Fall 2022, 1 student completed an independent mathematics education research project which resulted in submitting a paper for publication. He passed MATH 5380 with an A.

During Spring 2023, 3 students completed an independent mathematics education research project. All three resulted in papers submitted for publication. All passed MATH 5380 with A's.

RELATED ITEM LEVEL 3

Research Project Assessment Action

Action Description:

During the 2023-24 cycle, data similar to that collected during 2022-23 will be collected on MATH 5380. This data will be used to evaluate the effectiveness of MATH 5380.

Update to Previous Cycle's Plan for Continuous Improvement Item

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

Closing Summary

Building on the success of the 2021-22 year, we plan to work on improving during 2022-23 in the following ways:

1. To move forward in our Alumni Formal Assessments of MA Program, the next step to be taken will be to continue to collect personal email addresses of our graduates as part of a distribution list of MA Alumni in order to send out a survey to assess the effectiveness of the MA program at a future date.
2. To further market the 100% online MA program, we will request $2000 from the department to fund a continued marketing campaign going into Fall 2022 and Spring 2023. We will tweak what we learned from the last marketing campaign. If the department would support this, we would then request $2000-$3000 each from COSET and the School of Graduate Studies. The goal is to have an eventual enrollment of at least 30 students with a possibility of up to 45.
3. During Fall 2022, we will have 1 students participate in their oral comprehensive exams. During Spring 2023, we will have 3 students participate. During Summer 2023, we will have 2 students participate.
4. During 2022-2023 we anticipate 7 students completing research projects (1 in Fall 2022, 4 in Spring 2023 and 2 in Summer 2023).
5. During the 2022-23 year, I will ask the Math/Stats department policy committee to continue work on a COSET aligned policy for grad coordinator evaluation.
6. During the 2022-23 year, we will submit a revised Form B for Special Topics Course (MATH 5360) Quantitative Research in Education (this title may be revised) as we continue to round out the elective courses for the 100% online MA program.
7. During the 2022-23 year we will revisit our procedures for oral comprehensive exams. In the 2023-2024 academic year, we anticipate conducting 10 exams (8 of these during Spring 2024). This is quite large and very demanding on faculty's time. We will discuss if we should move to a hybrid written/oral exam as the program grows. We will also revisit the rubric for the exam.

Update of Progress to the Previous Cycle's PCI:

Closing Summary

Here is the progress we made on our plan for continuous improvement:

1. To move forward in our Alumni Formal Assessments of MA Program, the MA Graduate Coordinator continued to collect personal email addresses of our graduates as part of a distribution list of MA Alumni in order to send out a survey to assess the effectiveness of the MA program at a future date.
2. To further market the 100% online MA program, we requested $200 from the department to fund a continued marketing campaign going into Fall 2022 and Spring 2023. WE were given $1500. We tweaked what we learned from the last marketing campaign. We then requested and received $2000 each from COSET and the School of Graduate Studies. The goal is to have an eventual enrollment of at least 30 students with a possibility of up to 45. We currently have 24 students who will are enrolled for Fall 23.
3. During Summer 22, we will had 4 students participate in their oral comprehensive exams. During Fall 2022, we will had 1 students participate. During Spring 2023, we had 3 students participate. During Summer 2023, we will have 3 more students participate.

4. During 2023-2024 we anticipate 8 students completing research projects (3 in Summer 2023, 2 in Fall 2023, and 3 in Spring 24).
5. During the Summer 23 and then throughout the process in 23-24, we will submit a revised Form B for Special Topics Course (MATH 5360) Quantitative Research in Education (this title may be revised) as we continue to round out the elective courses for the 100% online MA program.
6. During the 2022-23 year we revisited our procedures for oral comprehensive exams. In the 2023-2024 academic year, we anticipate conducting 11 exams. This is quite large and very demanding on faculty's time. We will utilized a rotating Zoom approach where up to 4 students can be assessed in the same 2 hour block.

New Plan for Continuous Improvement Item

Closing Summary:

Closing Summary

Building on the 2022-23 cycle, we will make the following improvements during the 2023-24 cycle:

1. To move forward in our Alumni Formal Assessments of MA Program, the MA Graduate Coordinator will continue to collect personal email addresses of our graduates as part of a distribution list of MA Alumni in order to send out a survey to assess the effectiveness of the MA program at a future date.
2. To further market the 100% online MA program, we will requested $2000 from the department to fund a continued marketing campaign going into Fall 2023 and Spring 2024. We will tweak what we learned from the last marketing campaign. We will then request $2000-$3000 each from COSET and the School of Graduate Studies. The goal is to have an eventual enrollment of at least 30 students with a possibility of up to 45.
3. During Summer 2023, we will have 3 students participate in their oral comprehensive exams. In Fall 23, we will have 3 and in Spring 24 we will have 6. We will continue to collect data on retakes, pass, and high pass designations to better improve our 4 course courses.
4. During 2023-2024 we anticipate 8 students completing research projects (3 in Summer 2023, 2 in Fall 2023, and 3 in Spring 24).
5. During the Summer 23 and then throughout the process in 23-24, we will submit a revised Form B for Special Topics Course (MATH 5360) Quantitative Research in Education (this title may be revised) as we continue to round out the elective courses for the 100% online MA program.
6. In the 2023-2024 academic year, we anticipate conducting 11 oral comprehensive exams. This is quite large and very demanding on faculty's time. We will utilized a rotating Zoom approach where up to 4 students can be assessed in the same 2 hour block.