

# Mathematical Sciences [BS] [BS-MSCI]

# Cycles included in this report:

Jun 1, 2022 to May 31, 2023

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# Program Name: Mathematical Sciences [BS] [BS-MSCI]

# Reporting Cycle: Jun 1, 2022 to May 31, 2023

# 1 Is this program offered via Distance Learning?

100% Traditional or less than 50% Distance/Traditional

# 2 Is this program offered at an off-site location?

No

# 2.1 If yes to previous, provide addresses for each location where 50% or more of program credits may be earned.

# **3 Example of Program Improvement**

2017-2018:

To better meet the needs and interests of our majors, the department is introducing a new concentration in computer science for the BS in Mathematics.

The program for the mathematics education concentration is being considerably revised to meet the requirement imposed by the state of Louisiana that students must complete a year of student teaching rather than one semester as is currently the case.

# 2018-2019:

The mathematics education concentration has been revised to meet the new requirements of the state. The physics concentration has been revised to better reflect the physics courses which are actually offered. A new concentration in Computational Science has been added. We have also added an applied statistics minor.

# 2019-2020:

The Mathematics methods course, Educ 402, is now being taught by Dr. Christine Eastman. Dr. Eastman is a member of Department of Mathematical Sciences and has extensive experience with the local schools.

# 2020-2021:

All program faculty learned to teach online. Students gained experience presenting their work online and collaborating with others online.

# 2021-2022:

The schedule has been changed to better suit student needs.

2022-2023:

Starting in the fall of 2023 the two courses Math 170 and Math 175 will be replaced by one course with the new name Math 177.

One of the reasons for this change is to better prepare Math majors and other students for Math 190, first semester calculus. The sequence of topics in Math 177 is designed to better achieve this objective of better preparation for Math 190.

# 4 Program Highlights from the Reporting Year

#### 2017-2018:

The department is very pleased with the results of our graduating seniors on the Major Field Test. Three of the four achieved 86th, 92nd, and 96th percentile scores. This is our best performance in at least the last twenty years. The ETS<sup>®</sup> Major Field Tests are comprehensive undergraduate and MBA outcomes assessments designed to measure the critical knowledge and understanding obtained by students in a major field of study.

# 2018-2019:

One of our majors, Hailee Gilroy, made a score in the top 10% in the Major Field Test. Haile also presented a paper entitled "Constructing Steiner Triple Systems" at the MAA Mathfest held July 31-Aug 3 in Cincinnati, Ohio.

# 2019-2020:

Hailee Gilroy (BS in Math. Spring 2020) has been accepted into the Ph.D. program in Mathematics at Auburn University in Auburn, Alabama.

# 2020-2021:

Austin Nelson scored 200 on the Major Field Test. This is the highest score possible. He is pursuing a Ph.D. at Texas Tech U. this coming fall.

# 2021-2022:

One of the undergraduate teams placed 4th in the MAA Undergraduate Team Competition at the MAA Section meeting in Natchitoches in March. Kaitlyn Owen was accepted into the Masters program at ULL. Shrijan Dakal and Alex Baur were accepted in the Master's program here at McNeese.

# 2022-2023:

One of our majors, Ngoc Bui, won 2nd place in the annual Integration Bee, held on March 2, 2023 on the campus of the University of Mississippi. This competition is held in conjunction with the annual section meeting of the Louisiana-Mississippi Section of the Mathematical Association of America. There were some 50 undergraduate competitors from many of the universities in Louisiana and Mississippi.

## **5 Program Mission**

The purpose of the Bachelor of Science in Mathematical Sciences program is to provide students with a solid grounding in mathematics, encourage students to become effective problem solvers and foster the students' ability to effectively convey their mathematical knowledge. Concentrations in Mathematics, Statistics, Mathematics Education, Physics Education and Physics are offered within this degree program. The Mathematics/Physics Education concentrations provide graduates with practical skills in the professional competencies required of mathematics/physics teachers and lead to certification to teach mathematics/physics at the secondary level, grades 6-12, in the State of Louisiana. Other concentrations prepare students for a variety of careers in mathematical sciences or for entrance into a graduate program in mathematical sciences. Stakeholders: graduate schools, employers.

# **6 Institutional Mission Reference**

This degree supports the University's fundamental mission to offer baccalaureate curricula in service to the residents and employers of the SWLA region and beyond. It prepares students to become effective in academic and professional environments.

#### 7 Assessment and Benchmark MATH 190 Final Exam

Assessment: MATH 190 (Calculus I) final exam embedded questions.

Benchmark: 60% of students will achieve 60% success on items assessing problem-solving skills on the Math 190 final exam.

#### **Outcome Links**

#### Problem Solving [Program]

# 7.1 Data

# MATH 190:

Term	Studer 60% or	nts with <sup>r</sup> higher	Benchmark	
	#	%	met:	
Fall 2017	0/1	0%	No	
Spring 2017	3/3	100%	Yes	
Fall 2018	5/5	100%	Yes	
Spring 2019	2/5	40%	No	
Fall 2019	1/2	50%	No	
Spring 2020	1/1	100%	Yes	
Fall 2020		—	—	
Spring 2021	1/1	100%	Yes	
Fall 2021	2/3	67%	Yes	
Spring 2022	3/5	60%	Yes	
Fall 2022	2/2	100%	Yes	
Spring 2023	1/2	50%	No	

# **Outcome Links**

# Problem Solving [Program]

Graduates effectively solve problems in the mathematical sciences.

# 7.1.1 Analysis of Data and Plan for Continuous Improvement

# 2018-2019:

For the 2018-19 academic year, we have a success rate of 70% (7 out of 10 math majors). The benchmark for the year was met. We will continue to work on improving our procedures for collecting this disaggregated gen ed data. Gen ed data for all Math 190 students is now submitted by individual instructors directly to IRE. Thus, it is necessary for the department to collect data on Math majors separately at the end of each semester.

#### 2019-2020:

DMS had fewer majors enrolled in Math 190, but they were fairly successful in spite of the shift to the online environment.

#### 2020-2021:

Data from fall is missing and there were very few math majors enrolled in Math 190 in the spring.

#### 2021-2022:

Going back to in-person classes has helped us achieve our benchmark. 2022-2023:

By replacing the prerequisite of Math 170/Math 175 with Math 177 we hope to achieve better results.

#### Outcome Links

#### Problem Solving [Program]

# 8 Assessment and Benchmark MATH 411 Course-embedded Assessment

Assessment: MATH 411 Course-embedded assessments of ability to construct valid mathematical arguments.

Benchmark: 70% of majors will achieve 70% or greater success on the relevant final exam questions in MATH 411, Advanced Calculus.

#### **Outcome Links**

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

# 8.1 Data

Academic Year	Majors a a 70% sue	Benchmark met?	
	#	%	met
2017-2018	4/6	67%	No
2018-2019	8/12	67%	No
2019-2020	6/8	75%	Yes
2020-2021	4/5	80%	Yes
2021-2022	4/6	67%	No
2022-2023	4/6	67%	No

#### **Outcome Links**

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

# 2017-2018:

The benchmark was not met. The benchmark will be maintained. Starting next year the department will identify specific assessment items that the students found to be challenging.

# 2018-2019:

Although the benchmark was not met, the success rate fell just below 70%. The students were most successful with the Induction proof and were least successful with a question involving the Intermediate Value Theorem. While the students were able to state the theorem correctly and demonstrate understanding of a basic application, they had difficulty with a proof requiring them to make connections that they had not previously made. The plan for continuous improvement is to provide a greater number of opportunities for students to make these type of connections.

# 2019-2020:

Assignments made during class have been made more difficult in an effort to have students construct proofs with more connections.

# 2020-2021:

Continue to assign problems involving multi-step proofs, giving students the opportunity to reflect and provide hints and guidance when needed.

# 2021-2022:

All of the students demonstrated knowledge and ability to apply the Mean Value Theorem. 2022-2023:

The students who did not meet the benchmark missed a lot of class and had some nonacademic issues. Faculty will discuss individual cases and work to help these students to be more successful.

#### Outcome Links

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

#### 9 Assessment and Benchmark MATH 421 Course-embedded Assessment

Assessment: MATH 421 Course-embedded assessments of ability to construct valid mathematical arguments.

Benchmark: 70% of majors will achieve 70% success on the relevant final exam questions in MATH 421, Modern Algebra.

### Outcome Links

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

# 9.1 Data

Academic Year	Majors a a 70% suo	Benchmark	
	#	%	met:
2017-2018	10/13	77%	Yes
2018-2019	6/7	86%	Yes
2019-2020	8/11	73%	Yes
2020-2021	4/5	80%	Yes
2021-2022	4/6	67%	No
2022-2023	5/7	71%	Yes

#### Outcome Links

# Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

# 9.1.1 Analysis of Data and Plan for Continuous Improvement

# 2017-2018:

The benchmark was met. Starting next year the department will identify specific assessment items that the students found to be challenging.

# 2018-2019:

Overall students did very well on the assessment items this year. Only one student failed to meet the benchmark. One area that a small number of students struggled with was remembering to include all necessary details for mathematical proofs that involve multiple steps. One such proof was a problem where students were required to prove that a given function was an isomorphism from the real numbers under addition to the group of positive real numbers under multiplication.

Faculty were pleased with the student's responses to the assessment items, but will continue to emphasize proofs throughout this course.

# 2019-2020:

Student proof presentations to their peers helped them learn techniques of proof writing. We will continue to use this technique in either in-person teaching or virtual format.

# 2020-2021:

Students did well considering the impacts of the natural disasters occurring during the fall semester.

#### 2021-2022:

Most students demonstrated ability to verify that two groups are isomorphic. Some students struggled to construct proofs, since the previous two years were difficult academically. 2022-2023:

We will continue to emphasize student proof presentations to their peers. We are very pleased with the results so far. These presentations provide a opportunity for a discussion of what constitutes a proof in modern algebra and more generally in mathematics.

#### Outcome Links

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

# 10 Assessment and Benchmark MATH 431 Course-embedded Assessments

Assessment: MATH 431 Course-embedded assessments of ability to construct valid mathematical arguments.

Benchmark: 70% of majors will achieve a 70% success rate on relevant final exam questions in MATH 431, Mathematical Statistics and Probability.

#### Outcome Links

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

## 10.1 Data

Academic Year	Majors a a 70% suo	chieving ccess rate	Benchmark
	#	%	mer:
2017-2018	5/7	71%	Yes
2018-2019	10/13	77%	Yes
2019-2020	6/6	100%	Yes
2020-2021	4/5	80%	Yes
2021-2022	4/4	100%	Yes
2022-2023	4/4	100%	Yes

#### **Outcome Links**

#### Mathematical Arguments [Program]

Graduates construct valid mathematical arguments in the areas of analysis, modern algebra, and statistics.

# 10.1.1 Analysis of Data and Plan for Continuous Improvement

#### 2018-2019:

Students excelled at using Bayes' Theorem to find conditional probabilities as well as using integrals to find probabilities for continuous distributions. Using critical thinking skills to find a percentile of a distribution proved to be more of a challenge.

#### 2019-2020:

Cohort demonstrated improvement in critical thinking skills to find a percentile of a distribution.

#### 2020-2021:

Program faculty are pleased that the benchmark was met.

2021-2022:

Program faculty are pleased that the benchmark was met.

#### 2022-2023:

Study of fundamental distributions has been successful. Emphasis on this study will continue.

# 11 Assessment and Benchmark MATH 491 Capstone Project

Assessment: MATH 491 Capstone Project

Benchmark 1: Average scores will be 90% on the following items from the presentation evaluation form filled out by faculty members: Content, Organization, and Delivery.

Prior to 2018-2019, the benchmark was average scores will be 80%.

Benchmark 2: 100% of students will achieve a satisfactory rating on the research paper for the capstone project.

# Outcome Links

# **Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

Academic Year	# of students	Content	Organization	Delivery	Benchmark met?
2013-2014	—	85.45%	86.67%	88.81%	Yes
2014-2015	—	90.00%	93.75%	85.00%	Yes
2015-2016	—	90.25%	94.45%	90.89%	Yes
2016-2017	_	94.53%	95.86%	97.42%	Yes
2017-2018	—	94.35%	93.46%	96.23%	Yes
2018-2019	8	92.35%	92.39%	93.05%	Yes
2019-2020	5	95.20%	94.60%	92.60%	Yes
2020-2021	4	95.60%	97.6%	97.00%	Yes
2021-2022	4	94.86%	94.31%	96.42%	Yes
2022-2023	0				

# 11.1 Data

#### Outcome Links

#### **Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

#### 2018-2019:

The new benchmark of 90% was met. Program faculty agree that Math 236 (Mathematical Software), a course that was added to the curriculum in recent years, has helped students to develop skills needed for developing presentations. In addition, student success in this area has been aided by research experiences in earlier coursework, particularly those involving investigation of history of mathematics topics. We will continue to encourage early experiences with research as a plan for continuous improvement.

#### 2019-2020:

Four of the five capstone projects were in Spring. The students did their presentations online in difficult circumstances. Our plan is to stay flexible and improve our use of videoconferencing.

#### 2020-2021:

Students again presented online. Students and faculty learned to troubleshoot technology problems. We benefited from our experience from last year.

#### 2021-2022:

Presentations were back to in-person presentations. This provided students with a better experience presenting to a live audience.

#### 2022-2023:

Our Math Education majors are not required to do a capstone project. They are required to do student teaching. Results and plans concerning their experience in student teaching appear in the latter part of this document.

#### Outcome Links

#### Communication [Program]

Graduates express mathematical thinking effectively through oral and written communications.

Academic Year	Students that achieved a satisfactory rating		Benchmark met?	
	#	%		
2013-2014		100%	Yes	
2014-2015	—	100%	Yes	
2015-2016	—	100%	Yes	
2016-2017		100%	Yes	
2017-2018	—	100%	Yes	
2018-2019	8/8	100%	Yes	
2019-2020	5/5	100%	Yes	
2020-2021	4/4	100%	Yes	
2021-2022	4/4	100%	Yes	
2022-2023	0			

# 11.2 Data

#### **Outcome Links**

#### **Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

#### 2018-2019:

Benchmark is met. An area measured by the QEP rubric in which we have found students need support is Audience/Style, particularly awareness of intended audience and ability to present material succinctly. In mathematics, this is particularly challenging as it is difficult to appeal to a general audience while maintaining the appropriate level of rigor for a capstone paper. A close collaboration between mentors and students is needed for success in this area. Faculty will discuss new strategies for connecting students with potential mentors prior to the capstone experience.

## 2019-2020:

Faculty mentors acted on plan from last time. For example, one of our students, Whitney Frey, chose to discuss the Euler-Maclaurin formula. Applications were carefully chosen to be familiar the students in her audience.

#### 2020-2021:

Faculty were very pleased with the depth of understanding demonstrated in the student papers.

#### 2021-2022:

The rubric has been working out well. It is easy to apply.

#### 2022-2023:

No results for this year.

#### **Outcome Links**

#### Communication [Program]

Graduates express mathematical thinking effectively through oral and written communications.

#### 12 Assessment and Benchmark Major Field Test

Assessment: Major Field Test in Mathematics.

Benchmark: The mean score for mathematics students who take the major field test will be at or above the 50th national percentile.

#### Outcome Links

#### Problem Solving [Program]

# 12.1 Data

	М	cNee	se Re	sults		Nat Re	ional sults	McNeese's		
Academic Year	# of students who took exam	Low	High	Mean	Median	Mean	Median	distance from national mean	Benchmark met?	
2013-2014		136	154	146	148	156.4	151	-10.4	No	
2014-2015	14	133	167	149	148	155	154	-6	No	
2015-2016	6	126	158	142	140.5	156.3	154	-14.3	No	
2016-2017	_	133	161	146.2	145	156.3	154	-10.1	No	
2017-2018	4	147	200	171.5	181.5	156.3	154	+15.2	Yes	
2018-2019	11	141	192	160	156	156.3	154	+3.7	Yes	
2019-2020	1	159	159	159	159	156.3	154	+2.7	Yes	
2020-2021	5	144	200	167.2	168	156.3	154	+10.9	Yes	
2021-2022	5	138	153	145.8	144	156.3	154	-10.5	No	
2022-2023	0									

#### **Outcome Links**

#### Problem Solving [Program]

Graduates effectively solve problems in the mathematical sciences.

# 12.1.1 Analysis of Data and Plan for Continuous Improvement

# 2018-2019:

The benchmark was met again this year for the MFT. One student achieved a 92nd percentile score.

#### 2019-2020:

Only one student took the Major Field Test in the fall. None of spring candidates were able to take it due to the Covid pandemic. The department is pleased by the results of the one student who did take the test.

#### 2020-2021:

Austin Nelson's score was impressive, in addition we had two other very excellent scores.

#### 2021-2022:

The department is discussing ways to get students to take the exam more seriously to improve results.

#### 2022-2023:

Testing services on campus took on this responsibility some years ago. They have decided to discontinue this service. The math department is currently discussing setting procedures for doing the test administration ourselves.

#### Outcome Links

#### Problem Solving [Program]

### 13 Assessment and Benchmark Alumni Survey

Assessment: Particular items on the Alumni Survey serve as indirect assessments of student learning.

Benchmark 1: The average scores for the following items will be 4.50:

7a - Critical thinking skills 7b - Mathematical problem solving

Prior to 2018-2019, the benchmark was 4.00.

Benchmark 2: The average scores for the following items will be 4.00:

7e - Effective oral communications

7f - Effective written communications

#### **Outcome Links**

#### **Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

#### Problem Solving [Program]

Graduates effectively solve problems in the mathematical sciences.

#### 13.1 Data

Academic Year	# of respondents	Average 7a	Average 7b	Benchmark met?
2013-2014	—	4.00	4.00	Yes
2014-2015	_	5.00	5.00	Yes
2015-2016	—	5.00	5.00	Yes
2016-2017	—	4.75	5.00	Yes
2017-2018	9	4.77	4.88	Yes
2018-2019	6	4.16	4.33	No
2019-2020	0			
2020-2021	0			
2021-2022	2	5.00	5.00	Yes
2022-2023	4	5.00	5.00	Yes

#### **Outcome Links**

Problem Solving [Program]

#### 2018-2019:

The new benchmark of 4.5 was not met. One comment on the survey indicated that real world applications should be given more emphasis. In response, advisors have discussed strategies for encouraging students to enroll in Mathematical Science electives that are more applied in nature.

2019-2020: No survey data due to pandemic.

2020-2021:

No survey data due to hurricanes and pandemic.

2021-2022:

Data collection has resumed. We are looking at ways to improve data collection.

2022-2023:

We are very happy with our results.

#### **Outcome Links**

#### Problem Solving [Program]

Graduates effectively solve problems in the mathematical sciences.

#### 13.2 Data

Academic Year	# of respondents	Average 7e	Average 7f	Benchmark met?
2013-2014	_	4.50	4.00	Yes
2014-2015	_	4.67	4.33	Yes
2015-2016		4.00	4.00	Yes
2016-2017	_	4.00	4.25	Yes
2017-2018	9	4.33	4.44	Yes
2018-2019	6	4	4	Yes
2019-2020	0		_	
2020-2021	0		—	—
2021-2022	2	5.00	4.50	Yes
2022-2023	4	4.75	5.00	Yes

#### **Outcome Links**

**Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

# 2018-2019:

Benchmark was met. There was one outlier in the data. One respondent gave a rating of 1 on these items. Comments on the survey did not reveal the reason for this low rating. In the future, respondents will be encouraged to provide comments for below average scores.

2019-2020: No survey data due to pandemic.

2020-2021:

No survey data due to hurricanes and pandemic.

# 2021-2022:

Data collection has resumed. We are looking at ways to improve data collection.

# 2022-2023:

We are very happy with the results. Informal discussions with recent graduates confirms these survey results.

# **Outcome Links**

#### **Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

# 14 Assessment and Benchmark Exit Survey

Assessment: Particular items on the Exit Survey serve as indirect assessments of student learning.

Benchmark: The average scores for the following items will be 4.00:

- 31 Confidence in ability to solve a problem in your discipline
- 32 Confidence in ability to design a problem solution in your discipline

Prior to 2018-2019, the benchmark was 3.50.

#### Outcome Links

#### Problem Solving [Program]

Graduates effectively solve problems in the mathematical sciences.

# 14.1 Data

Academic Year	Average 32	Average 33	Benchmark met?
2013-2014	4.20	4.30	Yes
2014-2015	4.30	3.90	Yes
2015-2016	3.80	3.60	Yes
2016-2017	4.00	4.40	Yes
2017-2018	4.50	4.50	Yes
2018-2019	4.44	4.56	Yes
2019-2020		_	—
2020-2021	5	5	Yes
2021-2022	4.50	4.50	Yes
2022-2023	4.50	5.0	Yes

#### Outcome Links

#### Problem Solving [Program]

#### 2018-2019:

The benchmark is met. The department is considering the idea of an exit interview to supplement the information that we are seeking with this survey.

# 2019-2020:

No data due to pandemic and hurricanes.

## 2020-2021:

Based on comments from our survey we are considering ways to help our education majors with the content they need to teach their classes.

# 2021-2022:

We had 4 of the 5 exit surveys returned to us. We are happy to have a representative amount of data.

#### 2022-2023:

Only two surveys, both from math education majors. We are very pleased with the results.

#### Outcome Links

#### Problem Solving [Program]

Graduates effectively solve problems in the mathematical sciences.

# 15 Assessment and Benchmark Students

Assessment: Students' professional participation.

Benchmark: At least one student will deliver a presentation at a professional event every two years.

#### Outcome Links

#### **Communication** [Program]

Graduates express mathematical thinking effectively through oral and written communications.

# 15.1 Data

Academic Year	# of presentations	Benchmark met?
2013-2014	Two presentations at the 2014 McNeese State University Teaching and Learning Conference.	Yes
2014-2015	Two presentations: Mathematical Sciences major Lauren Snider gave a talk entitled "Particular 1,M,N- Antiautomorphisms of Directed Triple Systems" at the Forty- Sixth Southeastern International Conference on Combinatorics, Graph Theory, and Computing held at Florida Atlantic University March 2-6, 2015. Lauren Snider and Steven Dabelow gave talks at Mathfest 2015 in Washington DC in August 2015.	Yes
2015-2016	One presentation: Mathematical Sciences major Steven Dabelow gave a talk entitled "Regions of Stability of the BZ Reactions" at the 93rd annual meeting of the Louisiana- Mississippi Section of the Mathematical Association of America held at Louisiana State University-Shreveport, February 25-27, 2016.	Yes
2016-2017	—	—
2017-2018	One presentation: Mathematical Sciences major Britt Qualls gave a talk entitled "Some Bicyclic Antiautomorphisms of Mendelsohn Triple Systems" at the 49th Southeastern International Conference on Combinatorics, Graph Theory and Computing held at Florida Atlantic University on March 5, 2018. Even though the talk was given after Britt graduated, the talk was an expanded version of his capstone project as an undergraduate.	Yes
2018-2019	Jason Jones presented his paper entitled "An Introduction to Sabermetric" the annual section meeting of the LA-MS section held at Millsaps college in March 2019. Haile Gilroy presented her paper entitled "Constructing Steiner Triple Systems"at Mathfest, the annual summer national MAA meeting in Cincinnati, Ohio in August 2019.	Yes
2019-2020	—	
2020-2021		
2021-2022		
2022-2023	Mia Escareno directed a math ed session for the conference "Unlock Education" on February 2, 2023	Yes

#### 2018-2019:

Benchmark was met. The presentations were well received by conference participants.

#### 2019-2020:

No undergraduate presentations this year.

2020-2021: No undergraduate presentations this year.

2021-2022: No undergraduate presentations this year.

#### 2022-2023:

We are very pleased Mia was able to contribute to this math education conference. We will encourage other such participation of other math ed students in addition to encouraging non math ed students to present at local conferences, in particular the Louisiana Academy of Sciences conference and the section meeting of the Mathematical Association of America.

#### Outcome Links

#### Communication [Program]

Graduates express mathematical thinking effectively through oral and written communications.

#### 16 Assessment and Benchmark Praxis II Content Exam

Assessment: The Mathematics Education, Grades 7-12 Praxis Content Exam is #5161. This exam must be passed prior to student teaching. The passing score required by the state for 2017-2018 is 160.

Benchmark 1: Students will earn a minimum 160 mean overall score on the Praxis II content exam.

Prior to 2016-2017, the benchmark was a mean of 140 for the overall score on the Praxis II exam.

Benchmark 2: Praxis II subscore averages corresponding to each area of mathematics tested are within or above the average score range.

Benchmark 3: 80% of Mathematics Education majors will achieve a passing score on the Praxis Mathematics Education Exam (#5161) on the first attempt. Passing score set by the state is 160.

#### Outcome Links

#### Content and Pedagogy [Program]

# 16.1 Data

Academic Year	# of students	Mean score	Benchmark met?
2013-2014	—	151	Yes
2014-2015	—	146	Yes
2015-2016	_	165.5	Yes
2016-2017	—	169.3	Yes
2017-2018	_	161	Yes
2018-2019	3	170	Yes
2019-2020	2	167.5	Yes
2020-2021	2	169	Yes
2021-2022	1	183	Yes
2022-2023	2	165	Yes

#### **Outcome Links**

#### Content and Pedagogy [Program]

Secondary mathematics teacher candidates demonstrate knowledge of the content and pedagogical practices relevant to secondary education.

# 16.1.1 Analysis of Data and Plan for Continuous Improvement

#### 2018-2019:

Benchmark was met. New Math Praxis workshops are being developed by instructors in our department. These additional opportunities for preparation are important components of our plan for continuous improvement.

#### 2019-2020:

Benchmark was met. Workshops have been helpful.

#### 2020-2021:

Benchmark was met. Workshops and individual help sessions will continue. Math Ed advisors will renew efforts to identify students who are 'at risk' in this area and develop a plan for preparation with individual students.

#### 2021-2022:

Benchmark was met. The mean score was 183. The EPAC representative will ensure that curriculum is aligned to the Praxis Content exam and should add this information to the course syllabi to ensure that new instructors understand the importance of the material to the success of the candidates in completing the content exam and in becoming a successful educator.

#### 2022-2023:

#### **Outcome Links**

#### Content and Pedagogy [Program]

# 16.2 Data

Academic Year	Number and quantity, algebra, functions and calculus (34)	Geometry, probability and statistics, and discrete mathematics (16)	Sub-scores above average?
2015-2016	24	11	Yes
2016-2017	24.5	13	Yes
2017-2018	22	9	Yes
2018-2019	24.3	12.7	Yes
2019-2020	23	12	Yes
2020-2021	24	12.5	Yes
2021-2022	30	12	Yes
2022-2023			

#### **Outcome Links**

#### Content and Pedagogy [Program]

Secondary mathematics teacher candidates demonstrate knowledge of the content and pedagogical practices relevant to secondary education.

# 16.2.1 Analysis of Data and Plan for Continuous Improvement

#### 2018-2019:

Benchmark was met. New Math Praxis workshops are being developed by instructors in our department. These additional opportunities for preparation are important components of our plan for continuous improvement.

#### 2019-2020:

Benchmark was met. Workshops have been helpful.

#### 2020-2021:

Benchmark was met. Workshops and individual help sessions will continue. Math Ed advisors will renew efforts to identify students who are 'at risk' in this area and develop a plan for preparation with individual students.

#### 2021-2022:

Benchmark was met. The EPAC representative from the Mathematics department will ensure that curriculum is aligned to the Praxis Content exam and should add this information to the course syllabi to ensure that new instructors understand the importance of the material to the success of the candidates in completing the content exam and in becoming a successful educator.

#### 2022-2023:

#### Outcome Links

#### Content and Pedagogy [Program]

# 16.3 Data

Academic Year	Graduates on the fire	who passed st attempt	Graduates	Benchmark met?	
	#	%	#	%	
2013-2014	—	100%	—	100%	Yes
2014-2015	—	67%	—	100%	No
2015-2016	—	0%	—	100%	No
2016-2017	—	100%	—	100%	Yes
2017-2018	0/1	0%	1/1	100%	No
2018-2019	2/3	67%	3/3	100%	No
2019-2020	2/2	100%	2	100%	Yes
2020-2021	1/2	50%	2	100%	No
2021-2022	0/1	0%	1	100%	No
2022-2023	1/2	50%	2	100%	No

## **Outcome Links**

# Content and Pedagogy [Program]

Secondary mathematics teacher candidates demonstrate knowledge of the content and pedagogical practices relevant to secondary education.

# 16.3.1 Analysis of Data and Plan for Continuous Improvement

# 2018-2019:

Benchmark was not met as 1 of the 3 students did not pass on the first attempt. New Math Praxis workshops are being developed by instructors in our department. These additional opportunities for preparation are important components of our plan for continuous improvement.

2019-2020: Benchmark met.

# 2020-2021:

Benchmark was NOT met. Workshops and individual help sessions will continue. Math Ed advisors will renew efforts to identify students who are 'at risk' in this area and develop a plan for preparation with individual students.

#### 2021-2022:

The benchmark was not met. The sample size was small (n=1) and therefore, it is hard to draw significant conclusions with such a small sample size. However, the EPAC representative will ensure that curriculum is aligned to the Praxis Content exam and should add this information to the course syllabi to ensure that new instructors understand the importance of the material to the success of the candidates in completing the content exam and in becoming a successful educator.

2022-2023:

#### **Outcome Links**

#### Content and Pedagogy [Program]

# 17 Assessment and Benchmark Enrollment and Completers

Assessment: Enrollment numbers are based on candidates currently enrolled in the program who have submitted an EDUC 200 packet.

Benchmark: The EPP has set a goal to increase enrollment by 7% across programs each year from fall 2017 to fall 2021 to coincide with the MSU Strategic Plan goal concerning enrollment and recruitment.

# 17.1 Data

Academic Year	# officially enrolled with an EDUC 200 packet	# of completers in fall semester	# of completers in spring semester	Total # of completers
2013-2014	16			4
2014-2015	14			3
2015-2016	14			2
2016-2017	-	-	-	-
2017-2018	9	1	0	1
2018-2019	10	2	1	3
2019-2020		0	2	2
2020-2021	7	0	2	2
2021-2022		0	1	1
2022-2023				

#### 2018-2019:

Benchmark is met. We increased from 9 to 10 students enrolled and there were 3 graduates this year. We plan to participate in Geaux Teach again this year and we look forward to taking advantage of an additional Preview Day in the Fall semester.

#### 2019-2020:

We had 2 graduates this year and the number of students enrolled (with 200 packet) is not available. We are very pleased that adjustments were made in order to allow for student teaching to be completed virtually in Spring 2020 after Covid restrictions went into place.

#### 2020-2021:

Number of students enrolled with 200 packet dropped to 7. Benchmark was not met, but program faculty are relieved that the decrease was not any greater in light of Covid and hurricanes. There were again two completers for the year. Program faculty participated in Unlock Education as well as Preview Days. These took on virtual forms this year, but in Spring 21 we were able to meet students face to face again at preview days. Dr. Ogea met with students through Ed Rising at Barbe, Sulphur, Kinder, Oakdale, South Beauregard. Next year, efforts will be made to involve more DMS faculty in the ALL CALL opportunity and a special effort will be made to reach out to those students who have indicated interest in Math Education.

#### 2021-2022:

The number of completers dropped from 2 in each of the last two years down to 1 completer in 2021-2022.

Official program enrollment numbers were not posted due to the change in EDUC 200 admission resulting in a change in the reporting process.

The Burton College of Education and particularly the Department of Education Professions has made intentional efforts to recruit candidates into teacher-education programs and has focused particular attention on those from diverse backgrounds and within high needs areas. In addition to traditional attendance at parish career fairs and expos, the following are part of the MSU Department of Education Professions (EDPR) Recruitment and Retention Plan: Unlock Education, Call Me MISTER, Educators Rising, and minors.

Although the efforts are strong and we are committed to recruiting candidates from diverse backgrounds, results of these efforts are not immediate as these students are juniors or seniors in high school and the data reported in the Performance Profile for education provider programs is on completers. We will track the data for program admission to monitor new students and make adjustments as needed to attract a diverse group of candidates interested in the field of education.

2022-2023:

# 18 Assessment and Benchmark FEE Content

Assessment: The Field Experience Evaluation Domain 5 measures the Content Specific Components related to teaching observations.

The FEE Scoring Scale is as follows: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4- Highly Effective

Benchmark: 90% of the candidates will score a 3.50 or higher on each element of Domain 5 (Content Specific Components) on the Field Experience Evaluation (FEE) Rubric.

Prior to 2018-2019, the benchmark was 3.00.

Prior to 2017-2018, the benchmark was 100% of students will meet or exceed the benchmark of 2.00, set by the State of Louisiana.

#### **Outcome Links**

#### Content and Pedagogy [Program]

Secondary mathematics teacher candidates demonstrate knowledge of the content and pedagogical practices relevant to secondary education.

## 18.1 Data

MATH		Fall 2	2018		Spring	2019		Fall 2	2019	Spring 2020		
Component	#	Mean	Range	#	Mean	Range	#	Mean	Range	#	Mean	Range
5.1	2	4.00	4.00	1	4.00	4.00						
5.2	2	4.00	4.00	1	3.88	3.88						
5.3	2	3.88	3.75- 4.00	1	3.88	3.88						
5.4	2	3.48	3.25- 3.71	1	3.88	3.88						
5.5	2	3.88	3.75- 4.00	1	4.00	4.00						
5.6	2	4.00	4.00	1	4.00	4.00						
5.7	2	3.88	3.75- 4.00	1	3.75	3.75						
5.8	2	4.00	4.00									
5.9	2	4.00	4.00	1	4.00	4.00						
5.10	2	3.50	3.25- 3.75	1	4.00	4.00						
5.11	2	4.00	4.00	1	4.00	4.00						
5.12	1	4.00	4.00									
5.13	2	3.88	3.75- 4.00	1	3.88	3.88						
5.14	2	4.00	4.00	1	4.00	4.00						
5.15												
5.16												

MATH			Fall 2020 N=0	0			Spring 202	21
Component	#	Mean	Range	% Proficient	#	Mean	Range	% Proficient
5.1					2	3.69	3.38-4.00	100%
5.2					2	3.57	3.25- 3.88	100%
5.3					2	3.69	3.38-4.00	100%
5.4					1	2.88	2.88	0%
5.5					2	3.38	3.13-3.63	100%
5.6					2	3.17	3.00-3.33	100%
5.7					2	3.54	3.08-4.00	100%
5.8					1	3.58	3.58	100%
5.9					2	3.51	3.13-3.88	100%
5.10					2	3.63	3.25-4.00	100%
5.11					0			
5.12					2	3.57	3.13-4.00	100%
5.13					2	3.44	2.88-4.00	50%
5.14					2	3.57	3.25-3.88	100%
5.15					0			
5.16					0			
TECH 1					2	3.13	2.50-3.75	50%
TECH 2					2	3.76	3.63-3.88	100%
TECH 3					2	3.00	2.50-3.50	50%

MATH			Fall 202	1			Spring 20	22
Component	#	Mean	Range	% Proficient	#	Mean	Range	% Proficient
5.1	0				1	3.38	3.38	100%
5.2					1	3.88	3.88	100%
5.3					1	3.13	3.13	100%
5.4					1	3.13	3.13	100%
5.5					1	3.13	3.13	100%
5.6					1	2.88	2.88	0%
5.7					1	2.75	2.75	0%
5.8					1	3.13	3.13	100%
5.9					1	3.13	3.13	100%
5.10					1	3.25	3.25	100%
5.11					1	3.13	3.13	100%
5.12					1	3.13	3.13	100%
5.13					1	3.13	3.13	100%
5.14					1	3.13	3.13	100%
5.15								
5.16								
TECH 1					1	2.25	2.25	0%
TECH 2					1	3.00	3.00	100%
TECH 3					1	2.38	2.38	0%

MATH			Fall 202	2			Spring 20	23
Component	#	Mean	Range	% Proficient	#	Mean	Range	% Proficient
5.1								
5.2								
5.3								
5.4								
5.5								
5.6								
5.7								
5.8								
5.9								
5.10								
5.11								
5.12								
5.13								
5.14								
5.15								
5.16								
TECH 1								
TECH 2								
TECH 3								

# 2018-2019:

It appears that the weakest areas are 5.4 and 5.10 which relate to analyzing the mathematical thinking of others and computational proficiency. However, only 1 student fell below benchmark on each of these items.

We suggest modifying the benchmark to a mean value of 3.5 on each indicator. The nature of the data given in the chart would not lend itself to readily determining whether the current (90%) benchmark is met when a greater number of students are involved. A benchmark based on the mean seems more appropriate.

# 2019-2020:

Discrepancy in number of students assessed this year was found. Data will be checked.

# 2020-2021:

Benchmark of 3.5 on each indicator is not met. Due to more thorough application of standards, we would like to rollback the benchmark to coincide with a proficient rating of 3 on each benchmark. There were a number of items for which one or both of the two students assessed this year did not achieve the proficient rating. They include: Commitment to learning with understanding, knowledge of instructional strategies, and indicators related to use of technology. Program faculty feel that these weaknesses could have been partially the result of the disastrous events of this year, but remain concerned and are motivated to discuss earlier assessment and intervention in these areas to assure better preparation for student teaching.

# 2021-2022:

Data reported for the 2021-2022 academic year indicates that the two areas of technology remain below benchmark.

EPAC representatives from the Department of Mathematics will ensure that the content portion of Domain 5 aligns to the appropriate standards and will assist in the evaluation of content knowledge of candidates during the residency semester evaluations.

#### 2022-2023:

# 19 Assessment and Benchmark in TASC Standards - Lesson Planning

Assessment: InTASC Standards are aligned to the components of the lesson plan rubric. Lesson Plan Rubric scoring scale: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4-Highly Effective.

Benchmark: 80% of the candidates will score a 3.50 or higher on each element of the Lesson Plan Rubric.

Prior to 2018-2019, the benchmark was 3.00.

#### Outcome Links

#### Instructional Planning [Program]

Secondary mathematics teacher candidates plan effectively for instruction in secondary classes (grades 6-12) to include effective instructional delivery, appropriate content, opportunities for student involvement in the learning process, and assessments for student progress in secondary education.

#### 19.1 Data

Rubric Element	Standard	InTASC Standard		Fall 2018	Spring 2019	Fall 2019	Spring 2020
			Number				
			Mean				
			Range				
				•			•

Essential Questions		% Proficient				
		Number	1	1		
		Mean	4.00	4.00		
Content Standards		Range	4.00	4.00		
		% Proficient or Higher	100%	100%		
		Number	1	1		
		Mean	3.00	4.00		
Student Outcomes	4n	Range	3.00	4.00		
		% Proficient or Higher	100%	100%		
		Number	1	1		
		Mean	4.00	1.00		
Technology	51	Range	4.00	1.00		
		% Proficient or Higher	100%	0%		
		Number	1	1		
		Mean	4.00	4.00		
Educational Materials		Range	4.00	4.00		
		% Proficient or Higher	100%	100%		
		Number	1	1		
		Mean	3.00	4.00		
Procedures	3k	Range	3.00	4.00		
		% Proficient or Higher	100%	100%		
		Number	1	1		
		Mean	3.00	3.00		
Lesson "Hook"	8j	Range	3.00	3.00		
		% Proficient or Higher	100%	100%		
		Number	1	1		
Pre-Planned (Seed)		Mean	4.00	4.00		
Questions	8i	Range	4.00	4.00		
		% Proficient or Higher	100%	100%		
		Number				
Modeled Guided		Mean				
Collab, & Ind. Practice	7k	Range				
		% Proficient or Higher				
		Number	1	1		
		Mean	4.00	4.00		
Closure		Range	4.00	4.00		
		% Proficient or Higher	100%	100%		
		Number				

Number  Gi  Range  Image  I	Formative / Summative		Mean			
Mumber  Image: state of tigher  Mumber  Image: state of tigher    Relevance & Rationale  2j  Number  1  1    Relevance & Rationale  2j  Range  3.00  4.00	Assessment	6j	Range			
Relevance & Rationale  2  Number  1  1  1    Relevance & Rationale  2  Mean  3.00  4.00			% Proficient or Higher			
Mean  3.00  4.00			Number	1	1	
Relevance & Rationale  2j  Range  3.00  4.00			Mean	3.00	4.00	
Matrix  % Proficient or Higher  100%  100%  100%    Exploration, Extension, Supplemental  1  1  1  1    Mean  4.00  4.00  4.00  4.00  4.00    Barge  4.00  4.00  4.00  4.00  4.00  4.00    Mean  4.00	Relevance & Rationale	2j	Range	3.00	4.00	
Image: Supplemental Supplemental  Number  1  1  1    Berlorization, Extension, Supplemental  1			% Proficient or Higher	100%	100%	
Exploration, Extension, Supplemental  1e  Mean  4.00  4.00  4.00    Range  4.00			Number	1	1	
Exploration, Exerision, Supplemental  1e  Range  4.00  4.00    % Proficient or Higher  100%  100%  100%  100%    Differentiation  7j  Range  4.00  1    Mean  4.00  1  0  1    Differentiation  7j  Range  4.00  1    Student Use of Technology  Number  1  1  1    Mean  4.00  1  1  1  1    Teacher Use of Technology  Range  4.00  1  1  1    Number  1  1  1  1  1  1  1    Teacher Use of Technology  Range  4.00  1	Evaluration Extension		Mean	4.00	4.00	
Mumber  % Proficient or Higher  100%  100%    Differentiation  7j  Mean  4.00	Supplemental	1e	Range	4.00	4.00	
Number  1  1    Differentiation  7j  Mean  4.00	Copplemental		% Proficient or Higher	100%	100%	
$\begin{array}{ c c c c c c c } \begin{tabular}{ c c c c } \hline Mean & 4.00 & & & & & & & & & & & & & & & & & & $			Number		1	
Differentiation  7j  Range  4.00			Mean		4.00	
% Proficient or Higher  100%    Student Use of Technology  Mean  4.00     % Proficient or Higher  100%      100%  8ange  4.00      % Proficient or Higher  100%       100%  1        Teacher Use of Technology  Mean  4.00       Number  1	Differentiation	7j	Range		4.00	
Student Use of Technology  Number  1  Image  Image    Student Use of Technology  Range  4.00  Image			% Proficient or Higher		100%	
Student Use of Technology  Mean  4.00  Image			Number	1		
Statistical Sector  Range  4.00  Image  Image  4.00  Image	Student Lise of		Mean	4.00		
% Proficient or Higher  100%     Teacher Use of Technology  Mean  4.00      Mean  4.00        Teacher Use of Technology  Range  4.00       Mean  4.00         Interdisciplinary Connections  Mean  4.00  4.00      Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%     Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%     Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%     Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%     Modeled Guided Practice (Whole Group or Paired)  % Proficient or Higher  100%  100%     Mean  4.00  4.00        Mean  4.00	Technology		Range	4.00		
Teacher Use of Technology  Number  1  Image  Image    Range  4.00  Image  4.00  Image			% Proficient or Higher	100%		
Teacher Use of Technology  Mean  4.00  Image			Number	1		
Technology  Range  4.00  Image  Image  4.00  Image  Image  Image  4.00  Image	Teacher Lise of		Mean	4.00		
% Proficient or Higher  100%     Interdisciplinary Connections  Number  1  1     Mean  4.00  4.00      Mean  4.00  4.00      Mean  4.00  4.00      Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%     Modeled Guided Practice (Whole Group)  Range  3.00  4.00     Modeled Guided  % Proficient or Higher  100%  100%     Modeled Guided  % Proficient or Higher  100%  100%     Modeled Guided  % Proficient or Higher  100%  100%     Mean  4.00  4.00      Modeled Guided  % Proficient or Higher  100%  100%     Mean  4.00  4.00      Mean  4.00  4.00      Mean  4.00  4	Technology		Range	4.00		
Interdisciplinary Connections  Image  Number  1  1  Image  1  Image  1  1  Image  1  Image  1  Image  1  Image  1  Image  1  Image  Image  1  Image			% Proficient or Higher	100%		
Interdisciplinary Connections  Mean  4.00  4.00  4.00    Range  4.00 <t< td=""><td></td><td></td><td>Number</td><td>1</td><td>1</td><td></td></t<>			Number	1	1	
Interduction  Range  4.00  4.00    Connections  % Proficient or Higher  100%  100%  100%    Modeled Guided Practice (Whole Group)  Number  1  1  1    Modeled Guided Practice (Whole Group)  Range  3.00  4.00  1    Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%  1    Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  4.00  1    Collaborative Practice (Small Group or Paired)  Range  4.00  4.00  1    Mean  4.00  4.00  1  1  1    Mean  4.00  4.00  1  1    Mean  4.00	Interdisciplinary		Mean	4.00	4.00	
% Proficient or Higher  100%  100%    Modeled Guided Practice (Whole Group)  Mean  3.00  4.00  1    Modeled Guided Practice (Whole Group)  Range  3.00  4.00  1    Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%  1    Modeled Guided Practice (Whole Group)  % Proficient or Higher  100%  100%  1    Modeled Guided (Small Group or Paired)  Mean  4.00  4.00  4.00    Mean  4.00  4.00  4.00  4.00  4.00    Mean  4.00  4.00  4.00  4.00  4.00    Mean  4.00	Connections		Range	4.00	4.00	
Modeled Guided Practice (Whole Group)  Mean  Mean  3.00  4.00  Mean    Mean  3.00  4.00  Mean  3.00  4.00  Mean    Mean  3.00  4.00  Mean  100%  100%  Mean    Mean  Mean  1.00%  100%  100%  Mean  Mean    Mean  Mean  4.00  4.00  Mean  4.00  Mean    Collaborative Practice (Small Group or Paired)  Range  4.00  4.00  Mean  4.00  Mean    Mean  Mean  4.00  4.00  Mean  100%  Mean  Mean </td <td></td> <td></td> <td>% Proficient or Higher</td> <td>100%</td> <td>100%</td> <td></td>			% Proficient or Higher	100%	100%	
Modeled Guided Practice (Whole Group)Mean3.004.00ImagePractice (Whole Group)%%%<			Number	1	1	
Practice (Whole Group)  Range  3.00  4.00    % Proficient or Higher  100%  100%  100%    Collaborative Practice (Small Group or Paired)  Mean  4.00  4.00    % Proficient or Higher  4.00  4.00  4.00    % Proficient (Small Group or Paired)  % Proficient or Higher  100%  100%    % Proficient or Higher  100%  100%  100%    % Proficient or Higher  100%  100%  100%    % Proficient or Higher  100%  100%  100%    % Range  4.00  4.00  100%  100%	Modeled Guided		Mean	3.00	4.00	
% Proficient or Higher  100%  100%    Collaborative Practice (Small Group or Paired)  Mean  4.00  4.00    Range  4.00  4.00  4.00    % Proficient or Higher  100%  100%  100%    Mean  4.00  4.00  4.00    Mean  4.00  4.00  4.00    Mean  100%  100%  100%    Mean  4.00  4.00  4.00    Mean  4.00  4.00  4.00	Practice (Whole Group)		Range	3.00	4.00	
Collaborative Practice (Small Group or Paired)Number11Mean4.004.004.00Range4.004.00% Proficient or Higher100%100%111Mean4.004.00Mean4.004.00Mean4.004.00Range4.004.00			% Proficient or Higher	100%	100%	
Collaborative Practice (Small Group or Paired)Mean4.004.00Range4.004.004.00% Proficient or Higher100%100%Number11Mean4.004.00Mean4.004.00Range4.004.00			Number	1	1	
(Small Group or Paired)  Range  4.00  4.00    % Proficient or Higher  100%  100%  100%    Number  1  1  1    Mean  4.00  4.00  1	Collaborative Practice		Mean	4.00	4.00	
% Proficient or Higher  100%  100%    Number  1  1    Mean  4.00  4.00    Range  4.00  4.00	(Small Group or Paired)		Range	4.00	4.00	
Number  1  1    Mean  4.00  4.00    Range  4.00  4.00			% Proficient or Higher	100%	100%	
Mean  4.00  4.00    Range  4.00  4.00			Number	1	1	
Range 4.00 4.00			Mean	4.00	4.00	
			Range	4.00	4.00	

Independent Practice (Individual)	% Proficient or Higher	100%	100%	
	Number		1	
Contant Connection to	Mean		4.00	
Assigned Strategy	Range		4.00	
	% Proficient or Higher		100%	
	Number	1	1	
	Mean	4.00	4.00	
Informal Assessment	Range	4.00	4.00	
	% Proficient or Higher	100%	100%	
	Number	1	1	
	Mean	4.00	4.00	
Formal Assessment	Range	4.00	4.00	
	% Proficient or Higher	100%	100%	
	Number	1		
Differentiation by	Mean	4.00		
Content	Range	4.00		
	% Proficient or Higher	100%		
	Number	1		
	Mean	4.00		
Learning	Range	4.00		
, , , , , , , , , , , , , , , , , , ,	% Proficient or Higher	100%		
	Number	1		
	Mean	4.00		
Post-lesson Reflection	Range	4.00		
	% Proficient or Higher	100%		

2020-2021: See attached file for 2020-2021 data.

2021-2022: Data file attached.

2022-2023:

Files: See list of attachments to view. (Requires Adobe Reader or compatible viewer).

MATH ED\_ Lesson Plan Data\_20-21

MATH ED\_Lesson Plan Data\_20-21

MATH ED\_Lesson Plan Data\_21-22 MATH ED\_Lesson Plan Data\_21-22

#### 2018-2019:

Data is based on two candidates. The average of these two fell below benchmark for two items: Technology and Lesson Hook. It appears that the Spring 19 candidate had significant difficulty with Technology. Program faculty will be consulted to determine the reasons for this deficiency.

2019-2020:

Data not available for this year.

# 2020-2021:

Benchmark of 3.5 on each indicator is not met. Due to more thorough application of standards, we would like to rollback the benchmark to coincide with a proficient rating of 3 on each benchmark. There were multiple items for which one or both of the two students assessed this year did not achieve the proficient rating. The areas of greatest concern were those where neither candidate achieved proficiency. These areas include: Pre-planned seed questions, small group instruction, Assessments, Differentiation by learner, and Reflection on Instructional Strategies. Efforts toward improvement will include improved communication between DMS faculty and the EDUC 440 professor concerning the weaknesses of our candidates.

#### 2021-2022:

The benchmark of 3.00 was not met for all indicators in the lesson plan. Areas that fell below benchmark included: Additional Standards including 6 ELA and Cross-Disciplinary (2.00), Relevance (2.00), Student Misconceptions (2.00), Closure (2.00), and Reflection of Instructional Strategies (2.00).

All major assessments, including the lesson plan, are being realigned to the 2013 Danielson Framework for Teaching Model in preparation for the Fall 2024 CAEP accreditation visit therefore a new assessment will be implemented in Fall 2022.

2022-2023:

# 20 Assessment and Benchmark FEE - Specific inTASC Standards

Assessment: The Field Experience Evaluation (FEE) measures the following elements: Domain 1: Planning and Preparation; Domain 2: Classroom Environment; Domain 3: Instruction, and Domain 4: Professionalism.

The following scoring scale is used: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4-Highly Effective.

Benchmark: Candidates will earn a mean score of 3.00 or higher on each element in the Field Experience Evaluation (FEE) Rubric for Domains 1-4.

Prior to 2019-2020 the benchmark was, 90% of candidates will score a 3.00 or higher on each element in the Field Experience Evaluation (FEE) Rubric for Domains 1-4.

#### Outcome Links

#### Instructional Delivery [Program]

Secondary mathematics teacher candidates successfully complete and demonstrate effective instructional planning and teaching within practica and student teaching settings, reflecting on and refining professional practices suitable for secondary education.

# Instructional Planning [Program]

Secondary mathematics teacher candidates plan effectively for instruction in secondary classes (grades 6-12) to include effective instructional delivery, appropriate content, opportunities for student involvement in the learning process, and assessments for student progress in secondary education.

# 20.1 Data

Math Education - FEE with InTASC Standards(FEE pulled from Student Teaching semester):

Element	InTASC		Fall 2017 N=1		Spring 2018 N=0			
Liement	Standard	Mean	Range	%*	Mean	Range	%*	
Domain 1: Planning and Preparation		3.85	3.75-3.88	100%		0		
Component 1.1		3.85	3.75-3.88	100%				
1.1.1	4n	3.88	3.88	100%				
1.1.2	6r	3.88	3.88	100%				
1.1.3	2g	3.88	3.88	100%				
1.1.4	1b	3.75	3.75	100%				
Domain 2: The Classroom Environment		3.65	3.63-3.88	100%				
Component 2.1		3.69	3.63-3.88	100%				
2.1.1	3j	3.63	3.63	100%				
2.1.2	3d	3.63	3.63	100%				
2.1.3	3d	3.88	3.88	100%				
2.1.4	3d	3.63	3.63	100%				
Component 2.2		3.59	3.38-3.75	100%				
2.2.1	Зc	3.38	3.38	100%				
2.2.2	3f	3.63	3.63	100%				
2.2.3	3f	3.75	3.75	100%				
Domain 3: Instruction		3.60	3.25-4.00	100%				
Component 3.1		3.38	3.25-3.50	100%				
3.1.1	8f	3.50	3.50	100%				
3.1.2	4c	3.25	3.25	100%				
3.1.3	5e	3.38	3.38	100%				
Component 3.2		3.63	3.50-3.88	100%				
3.2.1	7a	3.63	3.63	100%				
3.2.2	Зј	3.50	3.50	100%				
3.2.3	4f	3.50	3.50	100%				
3.2.4	3d	3.88	3.88	100%				
Component 3.3		3.75	3.36-4.00	100%				
3.3.1	6d	3.75	3.75	100%				
3.3.2	6a	3.36	3.36	100%				
3.3.3	6d	4.00	4.00	100%				
3.3.4	8b	3.88	3.88	100%				
Domain 4: Professionalism		3.84	3.75-3.88	100%				
Component 4.1		3.84	3.75-3.88	100%				
4.1.1	90	3.88	3.88	100%				
4.1.2	91	3.88	3.88	100%				
4.1.3	90	3.75	3.75	100%				

\*% Proficient or higher.

Element	InTASC	Fa	ll 2018 N=2	Spri	ng 2019 N=1	Fal	l 2019 N=	Sprii	ng 2020 N=
	Standard	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Domain 1: Planning and Preparation		3.96	3.88-4.00	3.97	3.88-4.00				
Component 1.1		3.96	3.88-4.00	3.97	3.88-4.00				
1.1.1	4n	4.00	4.00	4.00	4.00				
1.1.2	6r	4.00	4.00	4.00	4.00				
1.1.3	2g	3.94	3.88-4.00	3.88	3.88				
1.1.4	1b	3.88	3.88	4.00	4.00				
Domain 2: The Classroom Environment		3.73	3.25-4.00	3.86	3.50-4.00				
Component 2.1		3.80	3.50-4.00	3.91	3.88-4.00				
2.1.1	Зј	3.75	3.75	3.88	3.88				
2.1.2	3d	3.88	3.75-4.00	3.88	3.88				
2.1.3	3d	3.69	3.50-3.88	4.00	4.00				
2.1.4	3d	3.88	3.75-4.00	3.88	3.88				
Component 2.2		3.65	3.25-4.00	3.79	3.44-4.00				
2.2.1	3c	3.63	3.50-3.75	4.00	4.00				
2.2.2	3f	3.44	3.25-3.63	3.50	3.50				
2.2.3	3f	3.88	3.75-4.00	3.88	3.88				
Domain 3: Instruction		3.69	3.13-4.00	3.62	3.00-4.00				
Component 3.1		3.48	3.13-3.75	3.34	3.00-3.63				
3.1.1	8f	3.32	3.13-3.50	3.00	3.00				
3.1.2	4c	3.63	3.50-3.75	3.38	3.38				
3.1.3	5e	3.51	3.38-3.63	3.63	3.63				
Component 3.2		3.71	3.13-4.00	3.56	3.25-4.00				
3.2.1	7a	3.44	3.13-3.75	3.25	3.25				
3.2.2	3j	4.00	4.00	4.00	4.00				
3.2.3	4f	3.57	3.38-3.75	3.25	3.25				
3.2.4	3d	3.82	3.75-3.88	3.75	3.75				
Component 3.3		3.83	3.63-4.00	3.88	3.75-4.00				
3.3.1	6d	3.63	3.63	3.88	3.88				
3.3.2	6a	3.94	3.88-4.00	4.00	4.00				
3.3.3	6d	3.94	3.88-4.00	3.88	3.88				
3.3.4	8b	3.82	3.63-4.00	3.75	3.75				
Domain 4: Professionalism		3.84	3.75-3.88	3.92	3.88-4.00				
Component 4.1		3.84	3.75-3.88	3.92	3.88-4.00				
4.1.1	90	3.82	3.75-2.88	4.00	4.00				
4.1.2	91	3.88	3.88	3.88	3.88				
4.1.3	90	3.82	3.75-3.88	3.88	3.88				

Element	InTASC	Fall 2020 N=0			Spring 2021 N=2			
Liomont	Standard	Mean	Range	% Proficient	Mean	Range	% Proficient	
Domain 1: Planning and Preparation					3.61	3.13-4.00	100%	
Component 1.1					3.61	3.13-4.00	100%	
1.1.1	4n				3.63	3.38-3.88	100%	
1.1.2	6r				3.82	3.63-4.00	100%	
1.1.3	2g				3.50	3.25-3.75	100%	
1.1.4	1b				3.51	3.13-3.88	100%	
Domain 2: The Classroom Environment					3.34	2.63-3.88	79%	
Component 2.1					3.49	3.13-3.88	100%	
2.1.1	Зј				3.13	3.13	100%	
2.1.2	3d				3.44	3.25-3.63	100%	
2.1.3	3d				3.76	3.63-3.88	100%	
2.1.4	3d				3.63	3.38-3.88	100%	
Component 2.2					3.15	2.63-3.75	50%	
2.2.1	3c				3.19	2.63-3.75	50%	
2.2.2	Зf				3.00	2.75-3.25	50%	
2.2.3	Зf				3.26	2.88-3.63	50%	
Domain 3: Instruction					3.13	2.50-3.75	68%	
Component 3.1					2.96	2.50-3.38	50%	
3.1.1	8f				2.94	2.50-3.38	50%	
3.1.2	4c				2.94	2.75-3.13	50%	
3.1.3	5e				3.01	2.88-3.13	50%	
Component 3.2					3.16	2.75-3.63	63%	
3.2.1	7a				3.01	2.88-3.13	50%	
3.2.2	Зј				3.19	2.75-3.63	50%	
3.2.3	4f				3.07	2.88-3.25	50%	
3.2.4	3d				3.38	3.25-3.50	100%	
Component 3.3					3.24	2.75-3.75	88%	
3.3.1	6d				3.32	3.25-3.38	100%	
3.3.2	6a				3.07	2.75-3.38	50%	
3.3.3	6d				3.50	3.25-3.75	100%	
3.3.4	8b				3.07	3.00-3.13	100%	

Domain 4: Professionalism			3.83	3.25-4.00	100%
Component 4.1			3.83	3.25-4.00	100%
4.1.1	90		3.63	3.25-4.00	100%
4.1.2	91		3.88	3.75-4.00	100%
4.1.3	90		4.00	4.00	100%

Element	InTASC		Fall 20 N=0	21		Spring 2022 N=1	2
	Standard	Mean	Range	% Proficient	Mean	Range	% Proficient
Domain 1: Planning and Preparation					3.16	3.00-3.25	100%
Component 1.1					3.16	3.00-3.25	100%
1.1.1					3.25	3.25	100%
1.1.2					3.00	3.00	100%
1.1.3					3.13	3.13	100%
1.1.4					3.25	3.25	100%
Domain 2: The Classroom Environment					2.97	2.63-3.13	71%
Component 2.1					2.94	2.63-3.13	75%
2.1.1					2.63	2.63	0%
2.1.2					3.00	3.00	100%
2.1.3					3.00	3.00	100%
2.1.4					3.13	3.13	100%
Component 2.2					3.00	2.75-3.13	67%
2.2.1					3.13	3.13	100%
2.2.2					2.75	2.75	0%
2.2.3					3.13	3.13	100%
Domain 3: Instruction					2.74	2.38-3.00	36%
Component 3.1					2.54	2.50-2.75	0%
3.1.1					2.63	2.63	0%
3.1.2					2.50	2.50	0%
3.1.3					2.50	2.50	0%
Component 3.2					2.78	2.50-3.00	25%
3.2.1					2.75	2.75	0%
3.2.2					2.50	2.50	0%

3.2.3	3.	00	3.00	100%
3.2.4	2.	88	2.88	0%
Component 3.3	2.	85	2.38-3.00	75%
3.3.1	3.	00	3.00	100%
3.3.2	3.	00	3.00	100%
3.3.3	3.	00	3.00	100%
3.3.4	2.	38	2.38	0%
Domain 4: Professionalism	3.	63	3.00-4.00	100%
Component 4.1	3.	63	3.00-4.00	100%
4.1.1	3.	88	3.88	100%
4.1.2	3.	00	3.00	100%
4.1.3	4.	00	4.00	100%

Element	InTASC		Fall 202 N=0	22	Spring 2023 N=1			
	Standard	Mean	Range	% Proficient	Mean	Range	% Proficient	
Domain 1: Planning and Preparation							100%	
Component 1.1							100%	
1.1.1							100%	
1.1.2							100%	
1.1.3							100%	
1.1.4							100%	
Domain 2: The Classroom Environment							71%	
Component 2.1							75%	
2.1.1							0%	
2.1.2							100%	
2.1.3							100%	
2.1.4							100%	
Component 2.2							67%	
2.2.1							100%	
2.2.2							0%	
2.2.3							100%	
Domain 3: Instruction							36%	

Component 3.1			0%
3.1.1			0%
3.1.2			0%
3.1.3			0%
Component 3.2			25%
3.2.1			0%
3.2.2			0%
3.2.3			100%
3.2.4			0%
Component 3.3			75%
3.3.1			100%
3.3.2			100%
3.3.3			100%
3.3.4			0%
Domain 4: Professionalism			100%
Component 4.1			100%
4.1.1			100%
4.1.2			100%
4.1.3			100%

# 2018-2019:

The benchmark was met. The data are based on 3 candidates. They scored 3.00 or higher on the FEE on each element. The lowest score was in the area of instruction.

We would again recommend a benchmark based on the mean score. See comment on the FEE Content assessment.

2019-2020: Data is not available for this year.

# 2020-2021:

There were 10 items for which one of the two students assessed this year did not achieve the proficient rating. These items were related to managing student behavior, questioning techniques, and engaging students in learning. Program faculty feel that these weaknesses could have been partially the result of the disastrous events of this year, but remain concerned and are motivated to discuss earlier assessment and intervention in these areas to assure better preparation for student teaching.

#### 2021-2022:

Data reported for 2021-2022 shows Domain 2 (2.97) and Domain 3 (2.74) had an overall mean of less than the benchmark of 3.00. Within Domain 2, Component 2.1 (2.94) and Element 2.1.1 (2.63) and Element 2.2.2 (2.75) fell below the benchmark (3.00).

Within Domain 3, all three components fell below benchmark (2,54, 2.78, 2.85). All elements within Component 3.1 were below benchmark, all elements except for 3.2.3 within Component 3.2 were below benchmark, and within Component 3.3, Element 3.3.4 (2.38) was below benchmark.

All major assessments, including the field experience evaluation, are being realigned to the Danielson Framework for Teaching Model in preparation for the Fall 2024 CAEP accreditation visit therefore a new assessment will be implemented in Fall 2022.

2022-2023:

# 21 Assessment and Benchmark Outcomes - TCWS

Assessment: Teacher Candidate Work Sample. The scoring scale for the Teacher Candidate Work Sample is: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4- Highly Effective.

Benchmark: 80% of candidates will score a 3.50 or above on each of the elements on the Teacher Candidate Work Sample Rubric.

Prior to 2018-2019, the benchmark was 3.00.

#### Outcome Links

#### Secondary Student Learning Impact [Program]

Secondary mathematics teacher candidates promote academic success and support academic performance for youth within secondary settings (grades 6-12).

#### 21.1 Data

Criteria		Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
	Number	0	2	1	2	1	0		0
	Mean		2.50	4.00	4.00	4.00			
	Range		2.00- 4.00	4.00	4.00	4.00			

Choice of Assessment	% Proficient or Higher	50%	100%	100%	100%		
	Number						
	Mean	2.00	4.00	3.50	4.00		
Pre-assessment	Range	1.00- 3.00	4.00	3.00- 4.00	4.00		
	% Proficient or Higher	50%	100%	100%	100%		
	Number						
	Mean	2.00	4.00	3.50	4.00		
Post-assessment	Range	2.00	4.00	3.00- 4.00	4.00		
	% Proficient or Higher	0%	100%	100%	100%		
	Number					1	
	Mean	2.00	4.00	3.50	4.00	4.00	
Alignment of Lesson Evidence	Range	2.00	4.00	2.00- 4.00	4.00	4.00	
	% Proficient or Higher	0%	100%	100%	100%	100%	
	Number						
Student Lovel of	Mean	3.00	4.00	3.50	4.00		
Mastery & Evaluation of	Range	3.00	4.00	3.00- 4.00	4.00		
Factors	% Proficient or Higher	100%	100%	100%	100%		
	Number						
	Mean	3.00	4.00	3.50	4.00		
Data to Determine Patterns & Gaps	Range	3.00	4.00	3.00- 4.00	4.00		
	% Proficient or Higher	100%	100%	100%	100%		
	Number			1		1	
	Mean	1.00	4.00	3.50	4.00	4.00	
Response to Interventions	Range	1.00	4.00	3.00- 4.00	4.00	4.00	
	% Proficient or Higher	0%	100%	100%	100%	100%	
	Number					1	
	Mean					4.00	
	Range					4.00	

Content Standards	% Proficient or Higher				100%	
	Number				1	
	Mean				4.00	
Strength: Data to	Range				4.00	
Determine	% Proficient or Higher				100%	
	Number				1	
Weakness: Data to Determine	Mean				4.00	
	Range				4.00	
	% Proficient or Higher				100%	
	Number				1	
	Mean				4.00	
Analysis	Range				4.00	
	% Proficient or Higher				100%	
	Number				1	
	Mean				4.00	
Application	Range				4.00	
Application	% Proficient or Higher				100%	

2021-2022: Data collection of the Teaching Cycle was impacted by COVID and Hurricane, therefore data is not reported here for 2021-2022 completer.

# </table

Criteria		Fall 2020	Spring 2021	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	Spring 2025
	Number	2							
	Mean	3.50							
Choice of Assessment	Range	3.00- 4.00							
	% Proficient or Higher	100%							
	Number	2							
	Mean	3.50							
Pre-assessment	Range	3.00- 4.00							
	% Proficient or Higher	100%							
	Number	2							
	Mean	3.50							

Post-assessment	Range	3.00- 4.00				
	% Proficient or Higher	100%				
	Number	2				
	Mean	2.50				
Alignment of Lesson Evidence	Range	2.00- 3.00				
	% Proficient or Higher	50%				
	Number	2				
Student Lovel of	Mean	3.50				
Mastery & Evaluation of	Range	3.00- 4.00				
Factors	% Proficient or Higher	100%				
	Number	2				
	Mean	3.50				
Data to Determine Patterns & Gaps	Range	3.00- 4.00				
	% Proficient or Higher	100%				
	Number	2				
	Mean	3.50				
- Response to Interventions	Range	3.00- 4.00				
	% Proficient or Higher	100%				

#### 2018-2019:

Benchmark was met. Data is based on one candidate from Fall 2018. The candidate scored 4.00/4.00 on all assessed items. Benchmark will be maintained.

2019-2020: Data not available for this year.

#### 2020-2021:

Proficiency was achieved by both students assessed on all but one indicator for this assessment. That indicator was alignment of lesson evidence. [Note: The data is entered in the Fall 20 column is for Spring 21 graduates]

# 2021-2022:

Due to the semesters impacted by COVID and hurricanes, data was not collected for the teaching cycle on some candidates, therefore there was not data to report here.

All major assessments, including the teaching cycle, are being realigned to the Danielson Framework for Teaching Model in preparation for the Fall 2024 CAEP accreditation visit therefore a new assessment will be implemented in Fall 2022.

2022-2023:

# 22 Assessment and Benchmark Math Praxis PLT

Assessment: Mathematics Education candidates must pass the Praxis PLT#5624 before student teaching. The Louisiana qualifying score is 157.

Benchmark: 80% of candidates will pass the Principles of Learning and Teaching Praxis exam on the first attempt.

#### Outcome Links

#### Content and Pedagogy [Program]

Secondary mathematics teacher candidates demonstrate knowledge of the content and pedagogical practices relevant to secondary education.

#### 22.1 Data

		Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
#5624 overall	Number	0	2	1	2	1	0	2	1
	Mean		175	188	180	178		176	184
	Range		174- 176	188	177- 182	178		173- 179	184
	% Pass 1st attempt		100%	0%	100%	100%		100%	100%
#5624 breakdown:	Number	0	2	1	2	1	0	2	1
Students as Learners	Mean		16.5	15	17	16		14.5	15
	Range		16-17	15	14-19	16		13-16	15
	% correct (21)		79%	71%	81%	76%		69%	75%
Instructional Process	Mean		13	18	17	16		15	14
	Range		12-14	18	14-20	16		14-16	14
	% correct (21)		62%	86%	81%	76%		71%	67%
Assessment	Mean		11.5	13	11	8		12.5	14
	Range		10-13	13	9-13	8		11-14	14
	% correct (13-14)		88%	100%	85%	62%		89%	100%
Professional Development Leadership and Community	Mean		9	12	10	9		9	9
	Range		9	12	7-12	14		8-10	9
	% correct (12-14)		64%	86%	71%	64%		69%	69%
Analysis of Instructional Scenarios	Mean		12.5	12	12	14		12.5	13
	Range		11-14	12	10-13	14		12-13	13
	% correct (16)		78%	75%	75%	88%		78%	81%

		Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023
#5624 overall	Number	0	2	0	2	0	1		
	Mean		179		183		184		
	Range		174- 184		178- 187		184		
	% Pass 1st attempt		100%		100%		100%		
#5624 breakdown:	Number		2		2		1		
Students as Learners	Mean		15		17		17		
	Range		13-17		16-18		17		
	% correct (20-21)		71%		85%		85%		
Instructional Process	Mean		18		14		15		
	Range		17-19		12-16		15		
	% correct (21)		86%		70%		71%		
Assessment	Mean		12		11.5		13		
	Range		12		11-12		13		
	% correct (13-14)		86%		82%		93%		
Professional Development Leadership and Community	Mean		9		10		13		
	Range		8-10		9-11		13		
	% correct (12-14)		67%		71%		93%		
Analysis of Instructional Scenarios	Mean		12		13		12		
	Range		9-14		13		12		
	% correct (16)		72%		81%		75%		

# 2018-2019:

The benchmark was met. The data is based on 3 candidates. Each of their scores exceeded the qualifying score of 157. The strongest area for this group was assessment. Moving forward, we will be interested in the effect of the program changes that were made this past year on candidate performance on the PLT. Candidates will take the PLT at an earlier point in their program. EDUC 203 is a new course in the program which will help to prepare candidates for this assessment.

# 2019-2020 and 2020-2021:

The benchmark was met. We are pleased that all candidates in this 2 year period passed the PLT on the first attempt. It appears that assessment is one of the strongest areas and professional development leadership is one of the weakest areas for this assessment.

#### 2021-2022:

The benchmark was met. The candidate scored 71% or above in all areas of the exam and achieved a passing score on the first attempt. Due to the small sample size, a review of all Secondary PLT data will be done to determine any program changes and preparation in coursework needed.

2022-2023:

Xitracs Program Report

Xitracs Program Report

# End of report