

# Annual Program Assessment Report

Academic Year Assessed: 2019-2020

Department/Program: Math

## 1. Program Map

**A curriculum map linking courses to program outcomes has been completed.**

Yes

No: Please contact Mandy if you need support with this.

**If completed, does your program map need to be updated?**

Yes: Please send your updated map to Mandy.

No

## 2. Assessment Plan and Schedule

**Please review your draft assessment plan & schedule and update as needed.**

## 3. Courses Assessed

STATS 216

M 151

M105

## 4. Program Outcomes Assessed

Montana University System Core – Mathematics

- apply the acquired skills to other courses;
- reason analytically and quantitatively;
- think critically and independently about mathematical situations;
- understand the quantitative aspects of current events;
- make informed decisions that involve interpreting quantitative information;
- make informed decisions about their personal and professional lives

## 5. Faculty Data and Course Perceptions

### a) Percentage of full-time faculty participating in assessment

100%

### b) What went well?

- Project-based learning increased community-building and better connection to content (STAT 216)
- Students performed well on final assessment, indicating acceptable understanding of basic statistics (STAT 216)
- Student participation and engagement (M 151)

- Student success rates in online section on par with face-to-face sections (M 151)
- Majority of students were able to navigate the online course and complete their work (M 105)

**c) What might have gone better?**

- Improved student involvement during extended class time (STAT 216)
- Improved student attendance and persistence (STAT 216)
- Due to COVID-19 transition to online, students struggled to grasp certain concepts which will impact them in subsequent courses (M 151)
- While students succeeded in the class, few excelled (M 105)

**6. Overall Assessment of Student Learning**

**a) Areas of strength demonstrated in student learning.**

STAT 216

- Application of basic statistical concepts: using the normal distribution, performing hypothesis tests, creating confidence intervals
- Active student engagement and interest in the course

M 151

- Exam scores showed good overall understanding of course material
- On-time homework submission

M 105

- Students were self-motivated and able to engage with the course material

**b) Opportunities to improve student learning.**

STAT 216

- Reasoning through probability problems
- Understanding vocabulary
- Over-reliance on statistical software (lack of mathematical and logical understanding)

M 151

- Ability to demonstrate understanding of complex trigonometry topics

M 105

- Ability to apply feedback and learn from errors

**c) Measures of student feedback/indirect learning used**

<b>Assessment Measure</b>	<b>Where</b>
Anecdotal/informal conversations with students	STAT 216, M 151
Instructor-created feedback forms	
Institutional student course evaluations	M 151
Student success rates in your course	STAT 216, M 151
Other indirect measures of student learning (surveys, exit interviews, focus groups, job placement, etc)	

**d) Planned changes and measures of success.**

Course	Planned Change	Reason for Change	Success Measure
STAT 216	<ul style="list-style-type: none"> <li>Guided student practice on first project</li> <li>More practice requiring computation</li> </ul>	<ul style="list-style-type: none"> <li>Student difficulty reasoning through probability problems and understanding vocabulary.</li> <li>Weakness in computation and logical understanding</li> </ul>	<ul style="list-style-type: none"> <li>Better explanations of concepts within the first project.</li> <li>Improved ability to perform computations by hand</li> </ul>
M 151	Incorporate group project on verifying trigonometric identities	Student difficulty demonstrating understanding of trigonometry topics	Improved performance on selected exam questions
M 105	<ul style="list-style-type: none"> <li>Schedule meeting times for students to collaborate</li> <li>Require students to email exam corrections</li> </ul>	Consistency in student difficulty with common concepts; need to apply feedback	Improvement in overall exam scores; fewer repeated errors

**e) Changes resulting from previous assessments: What was changed and what drove those changes? How was success measured?**

STAT 216: Based on student understanding, created projects to apply concepts to real-world problems. Success was measured on improved student ability to apply concepts to problems. Based on student feedback, increased frequency and improved specificity of explanations to use statistical software. Success was measured by students' improved use of the software.

M 151: Based on student requests, incorporated Pencast lectures for each section covered. Success was measured by positive student feedback, including students crediting the recordings with impacting their persistence in the course.

**f) What previous departmental or program-level changes have led to outcome improvements? Explain.**

## 7. College Learning Outcomes Assessed

**a) CLOs assessed and tools used**

CLOs	Course	Assessment Tools	Rating	Average Rating
<b>Communication</b>				
<b>Critical Thinking</b>	STAT 216	Cumulative final exam	3	3
	M151	Ch. exams & cumulative final	3	
	M105	Final exam	3	
<b>Professionalism</b>				

Average assessment of student CLO attainment:

- 4) Exceeded expectations      3) Met expectations
- 2) Approaching expectations    1) Did not meet expectations

**b) Discussion of student CLO attainment.**

STAT 216: On cumulative final exam (used to measure CLO), class mean was 81.83 and median was 83.77.

M 151: Student performance on assignments and exams indicated student attainment of learning goals at a satisfactory level.

M 105: High overall student success rate in the course.

**c) Areas of strength demonstrated in student CLO attainment.**

STAT 216: Descriptive statistics

M 151: Overall good student understanding of the course material in most areas

M 105: Students were able to apply a variety of tools and use prior knowledge from previous classes

**d) Opportunities to improve CLO attainment.**

STAT 216: Multiplication rule for probability and confidence intervals for proportion

M 151: Demonstrating full understanding of trigonometric concepts

M 105: Applying critical thinking to multi-step problems

**e) Planned changes to CLO assessment and measures of success.**

STAT 216: no planned change

M 151: Incorporate group project on verifying trigonometric identities; improved student performance on course assessments

**8. High Impact Practices**

**a) High Impact Practices and integration methods**

HIP	Where	How
First-Year Seminars and Experiences		
Common Intellectual Experiences		
Learning Communities		
Writing-Intensive Courses		
Collaborative Assignments and Projects		
Undergraduate Research		
Diversity/Global Learning		
ePortfolios		
Service Learning/Community-Based Learning		
Internships		
Capstone Courses and Projects		

**b) Impact on student success and discussion.**

c) Planned changes to HIPs integration and success measures.

## 9. Response to Assessment

**a) Based on the analysis of the data, what was learned from this assessment period?**

Some areas of student weakness in the courses studied were identified, and plans have been created by individual faculty with the goal of improving student learning the next time those courses are taught by those faculty. Much of the assessment results, especially from Spring 2020, were affected by the changes made to our modes of instruction due to COVID-19. I think that many instructors gained valuable insights into better ways to teach math online due to the shift to online instruction for all courses.

**b) Will there be any program-level curricular or assessment changes (such as plans for measurable improvements, or realignment of learning outcomes)?**

YES  NO

If yes, when will these changes be implemented and how (if applicable) will they be measured?

The Department will be undergoing a review this year of the Outcomes Assessment charts on our syllabi. The goal is to standardize the methods of assessment used to make them more consistent across the board, and based on common assessments (when they exist) that all faculty teaching a course use. This should make the data clearer and easier to analyze in order to identify areas of weakness across the department as a whole instead of in each individual section of a course.

**c) If other criteria are used to recommend program changes (such as exit surveys, or employer satisfaction surveys) please explain how the responses are driving department, or program decisions.**

Other criteria are not currently used to recommend program changes.

Please return this completed form to Mandy Wright at [assessment@gfcmsu.edu](mailto:assessment@gfcmsu.edu).