

**SJSU Annual Program Assessment Form
for Degrees, Certificates and Credential Programs
2020 Report**

Department: Mathematics and Statistics
Program: MA Mathematics
College: Science
Program Website: https://catalog.sjsu.edu/preview_program.php?catoid=2&poid=855&returnto=96
Link to Program Learning Outcomes (PLOs) on program website: https://www.sjsu.edu/math/assessment/ma-ms-math-plo/ https://www.sjsu.edu/math/assessment/ms-statistics-plo/
Program Accreditation (if any):
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Date of Report: March 14, 2021

Part A

1. List of Program Learning Outcomes (PLOs)

PLO 1:	Demonstrate a specialized knowledge of mathematics consistent with the graduate-level course sequences
PLO 2:	Students will evaluate and synthesize research articles in their subfield of mathematics.
PLO 3:	Students will develop effective oral communication skills in their subfield of mathematics.
PLO 4:	Students will develop effective writing communication skills in their subfield of mathematics.

2. Map of PLOs to [University Learning Goals \(ULGs\)](#)

ULG 1 – Specialized Knowledge PLOs 1, 2, 3, and 4
ULG 2 – Broad Integrative Knowledge PLO 2
ULG 3 – Intellectual Skills PLO 1
ULG 4 – Applied Knowledge PLOs 3 and 4
ULG 5 – Social and Global Responsibilities PLOs 1, 2, 3, and 4

3. Alignment – Matrix of PLOs to Courses

PLO/Courses	MATH 221A	MATH 221B	MATH 231A	MATH 231B	MATH 297A	MATH 298	MATH 299
PLO 1	1	2 (A)	1	2 (A)			
PLO 2	1		1		3 (A)		
PLO 3	1		1			3 (A)	
PLO 4	1		1				3 (A)

**1 - Introduced, 2 - Reinforced, 3 - Mastered*

4. Planning – [Assessment Schedule](#)

	2020	2021	2022	2023	2024
PLO 1				A	
PLO 2			A		I
PLO 3			A		I
PLO 4			A		I

**A - Assessed, I – Implement*

5. Student Experience

The PLOs are communicated to our students through our website at <https://www.sjsu.edu/math/assessment/ma-ms-math-plo/>

Part B

6. Assessment Data and Results

In Fall 2020, we assessed PLO 1, “Demonstrate a specialized knowledge of mathematics consistent with the graduate-level course sequences” in MATH 231A (Real Analysis).

Instruments

The following course learning objectives (CLOs) are used to assess PLO 1:

CLO 1:	Use the monotone and dominated convergence theorems to solve problems
CLO 2:	Construct examples of sets, functions, measures, and sigma-algebras to illustrate the necessity of hypotheses in theorems or disprove false statements.

CLO 1 was assessed through six problems in homework 4, 5, 6 and 7, and CLO 2 through 10 problems in homework 4, 5, 8, and 10 (see the appendix). Each problem was graded for completeness and correctness.

Data

A total of 8 students were enrolled in the class, of which 7 were students in the MA Mathematics program and one student from the Electrical Engineering program. We included only the students enrolled in the MA Mathematics program in our analysis.

Results

CLO	Number of students assessed	Number of students (%) achieving the SLO	Number of students (%) NOT achieving the SLO	CLO achieved	Benchmark
1	7	7 (100%)	0 (0%)	Yes	70%
2	7	4 (57.1%)	3 (42.9%)	No	70%

PLO	Number of students assessed	Number of students (%) achieving the PLO	Number of students (%) NOT achieving the PLO	PLO achieved	Benchmark
1	7	4 (57.1%)	3 (42.9%)	No	70%

**Remark: A student is considered to have achieved the PLO if he or she achieved both CLOs.*

7. Analysis

The students performed extremely well in achieving CLO 1. However, their performance in achieving CLO 2 was unsatisfactory. The instructor suggested that CLO 2, which calls for the construction of counterexamples, requires a higher degree of mastery of the material taught. Therefore, it might not be appropriate to assess CLO 2 in MATH 231A.

8. Proposed changes and goals (if any)

Instead of assessing PLO 1 in MATH 231A, we will be assessing the PLO in MATH 231B (Functional Analysis).

Part C

9. Program Learning Outcomes

What are your proposed closing-the-loop action items and completion dates?

PLO 1 will be assessed in MATH 231B in Spring 2023.

Describe the progressive changes and the status in the table below.

Proposed Changes and Goals	Status Update (what's being done and results observed)	Date reported
PLO 1 will be assessed in MATH 231B in Spring 2023.		March, 2021

10. Program planning action items (only program planning items to be entered here)

What is the DIRECT WEB LINK to your program's latest action plan? (You can find it by selecting the relevant college in [Program Records](#) to locate your program towards the bottom of the webpage.)

Place your link here: <https://drive.google.com/file/d/0B2mlgwOdtz6VeFEtSmFuWjE2STQ/view>

Describe THE ASSESSMENT RELATED ACTION items from your latest program planning and describe the status in the table below.

Action item description	Status Update (what's being done and results observed)	Action started on	Action completed on
The current PLOs 3 and 4 replaces the original PLO 3, "to communicate both orally and in writing in their sub-field of mathematics". This allows for a separate assessment of the oral and written communication skills the students.	The revision has been completed.	November, 2019	March, 2021
Standardize the CLOs to be used in the assessment of the PLOs to facilitate year-to-year comparisons.	We have identified 2 CLOs for assessing PLO 1.	November, 2019	Ongoing