

College	Science
Department	Statistics and Biostatistics
Program	MS Statistics
Reporting for Academic Year	2021-2022
Last 5-Year Review	2018-2019
Next 5-Year Review	2023-2024
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Author of Review	
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I. SUMMARY OF ASSESSMENT

A. Program Learning Outcomes (PLO)

PROGRAM LEARNING OUTCOMES (PLOs)	
Students graduating with a <degree program> will be able to:	
PLO 1	Apply biostatistical methodology to data to (a) produce descriptive statistics, probability models, and visual displays (b) select probability distributions to implement statistical inference (estimation and hypothesis testing), and (c) critique biostatistical models for uncertainty, likelihood, modeling and error analysis at the Master's level.
PLO 2	Evaluate practical problems arising in biostatistics to select and formulate models for solutions using these methodologies.
PLO 3	Select and generate biostatistical software output and evaluate the results appropriately.
PLO 4	Derive basic theory, explain biostatistical concepts, and clearly communicate analytical results to others.

Program Learning Outcome(S) Assessed

For MS in Statistics

Year 4: 2021-2022	
1. Which PLO(s) to assess	PLO 2 & PLO 3 & 4
2. Is it aligned to an ILO?	No
3. If yes, list ILO.	
4. Course name and number	STAT 692 – Comprehensive Exam
5. SLO from course	Derive and understand basic theory underlying these methodologies Formulate and model practical problems for solutions using these methodologies

		Produce relevant computer output using standard statistical software and interpret the results appropriately
6.	<i>Assessment activity</i>	Written Comprehensive Exam
7.	<i>Assessment Instrument</i>	Grades from exam
8.	<i>How data will be reported</i>	Quantitative, proportions of students in each category from 1-5 (5 mastered)
9.	<i>Responsible person(s)</i>	STAT 692 instructor, Assessment Rep
10.	<i>Time (which semester(s))</i>	Fall and Spring
11.	<i>Ways of closing the loop</i>	Included in end-of year report and internal assessment of PLOs.

B. Summary of Assessment Process

. Instrument(s):

We implemented quantitative assessment of the results of our Comprehensive Examination by mapping all but one of the PLO's (#5) to specific course problems on the MS comprehensive exam. Rubrics were established for the outcomes and implemented.

It was decided that PLO #5 is better addressed by term projects that involve communication (either a written project or presentation that is worth considerable weight in the grading scheme of the course). STAT 632 "Theory and Application of Regression" will be used for assessment of PLO #5. It should be noted that the assessment of PLO #5 is at the end of the first year of the program, while the other assessments are at the end of the program.

Sampling Procedure: We sample by gathering data from all students attempting to complete our capstone experience, both STAT 632 and the comprehensive exam.

Sample Characteristics: All MS Statistics students at, or near, to the end of their program were identified.

Data Collection: The comprehensive exam is given twice a year, Fall and Spring. All tenure/tenure track faculty participate in the evaluation of student performances on this exam that are then used to evaluate the PLO's. STAT 632 is given every Spring for which the PLO #5 is identified and assessed by the instructor on record.

Data Analysis: We currently utilize Google Sheets to incorporate the rubrics that were established for the outcomes, to analyze the data.

Summary of Assessment Results

Main Findings: **Main Findings:**

Frequencies of Rubric-Scores for Statistics MS 2021-2022

Rubric Score	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5*	PLO 6
1	0	1 (2%)	4 (8%)	1 (2%)	1 (2%)	1 (2%)
2	1 (2%)	7 (14%)	6 (12%)	0	0	7 (14%)

3	7 (14%)	14 (29%)	9 (18%)	5 (10%)	0	14 (29%)
4	16 (33%)	14 (29%)	10 (20%)	20 (41%)	7 (13%)	14 (29%)
5	25(51%)	13 (27%)	20 (41%)	23 (47%)	45 (85%)	13 (26%)
Total	49	49	49	49	53	49

Summary Statistics of Rubric Scores for Statistics MS 2020-2021

Statistic	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5*	PLO 6
Minimum	2	1	1	1	1	1
Maximum	5	5	5	5	5	5
Median	5	4	4	4	5	4
Mean	4.3	3.6	3.7	4.3	4.5	3.6
Std. Deviation	0.8	1.1	1.3	0.8	0.6	1.9

* PLO5 was from a course rubric and not all in the course took the Comprehensive Examination.

Recommendations for Program Improvement:

Due to semester conversion, much of existing course content and course sequences have been altered. This has resulted in a drastic increase of student advising. We also noticed a slight decrease in our rubric scores and faculty contribute it to the online learning and COVID.

Next Step(s) for Closing the Loop:

We will continue to monitor the evaluation of our PLO's to determine if additional advising or curricular changes need to be addressed.

Other Reflections: We have no additional reflections on assessment at this time.

C. Assessment Plans for Next Year

Most PLOs are the same and assessment will be for comparable courses.

Year : 2022-2023	
1. Which PLO(s) to assess	PLO 5
2. Is it aligned to an ILO?	Yes
3. If yes, list ILO.	Communication
4. Course name and number	STAT 632 – Linear and Logistics Regression
5. SLO from course	Communicate statistical concepts clearly and appropriately to others.
6. Assessment activity	Written project report
7. Assessment Instrument	Departmental Rubric for written communication
8. How data will be reported	Quantitatively, proportions of students in each category from 1-5 (5 mastered)
9. Responsible person(s)	STAT 632 Instructor, Assessment Rep

10. <i>Time (which semester(s))</i>	Spring 2019
11. <i>Ways of closing the loop</i>	Included in end-of year report and internal assessment