Academic Program
Plan for Assessment of Student Learning Outcomes
College of Arts and Sciences
The University of New Mexico

A. College, Department and Date

   1. College: Arts and Science
   2. Department: Mathematics and Statistics
   3. Date: December, 2024

B. Academic Program of Study*

     B.S. Statistics

C. Contact Person(s) for the Assessment Plan

D. Broad Program Goals & Measurable Student Learning Outcomes

1. Broad Program Learning Goals for this Degree/Certificate Program

A. *Knowledge*: Learn the basic concepts, principles, definitions, theoretical and computational results of statistics.

B. *Skills:* Learn how to formulate, analyze, and solve problems in statistics. Learn how to create formal proofs. Acquire oral and written communication skills to convey statistical ideas and results.

2. List of Student Learning Outcomes (SLOs) for this Degree/Certificate Program

A.1. Calculus: Learn basic definitions, concepts, and fundamental theorems of calculus/analysis.

     UNM Goals (_X_ Knowledge ___ Skills ___ Responsibility)

A.2. Symbolic and abstract thinking: Ability to give precise statements and construct logical arguments. Including statements of definitions, differentiating between hypotheses and conclusions of theorems, and understanding generalizations of basic concepts.

     UNM Goals (_X_ Knowledge ___ Skills ___ Responsibility)

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* Academic Program of Study is defined as an approved course of study leading to a certificate or degree reflected on a UNM transcript. A graduate-level program of study typically includes a capstone experience (e.g. thesis, dissertation, professional paper or project, comprehensive exam, etc.).

B.1. Statistical data analysis: Demonstrate competence in data summarizing and plotting using a high-level statistical programming language (such as R, SAS, or Stata). Ability to implement statistical software analyses packages for designed experiments, sample surveys and observational studies. Be able to correctly interpret the results, understand the limitations of the procedures, and understand the appropriate scope of conclusions.

UNM Goals (___ Knowledge _X_ Skills ___ Responsibility)

B.2. Probability and statistical modelling: Be able to solve probability problems, with discrete and continuous univariate random variables and apply the Central Limit Theorem. Demonstrate an understanding of statistical models for standard designed experiments, sample surveys, and observational studies. Be able to understand and apply point estimation, confidence interval and hypothesis testing for a sample.

UNM Goals (___ Knowledge _X_ Skills ___ Responsibility)

E. **Assessment of Student Learning Three-Year Plan**

1. **Timeline for Assessment**

Year/Semester	Assessment Activities	SLO #
Year 1, Fall		
Year 1, Spring	Stat 345	A1, B2
Year 2, Fall		
Year 2, Spring	Stat 445	A2, B2
Year 3, Fall	Stat 345	A1, B2
Year 3, Spring	Stat 428	A2, B1

2. **How will learning outcomes be assessed?**

Direct Measure:
Instructors will pose questions on final exams that target the course specific SLOs listed above. They will then record the data and submit the report to the Undergraduate Committee and Department Advisor at the end of the semester. The report will include the total number of statistics majors (either all statistics majors in class or only those statistics majors who passed a pretest on prerequisite knowledge and skills – at the discretion of the instructor) as well as the number of those who performed at the acceptable level or better.

Indirect Measure:
The Department Advisor will distribute an exit survey to the graduating statistics majors. The survey asks the students to self-assess their achievement on selected SLOs and specify their plans after graduation.

Performance Target:

"Acceptable or better" performance by 60% of the tested/surveyed statistics majors.

3. **What is the unit's process to analyze/interpret assessment data and use results to improve student learning?**

   Each semester, course reports will be prepared by instructors teaching the courses listed in the Table in section E.1 and submitted to the Undergraduate Committee and the Department Advisor. In addition, an exit survey will be distributed to graduating statistics majors by the Department Advisor who will also collect and store the anonymous responses.

   The past three-year course reports collected from the instructors and the survey data collected from the students, the previous undergraduate program assessment report and the respective official feedback from the College of Arts & Sciences will be forwarded by the Department Advisor to the Undergraduate Committee assigned to do the report over the collected data. The Undergraduate Committee will interpret/summarize the data and submit the report to the provided assessment contact in the College of Arts & Sciences, Department Chair, and Department Advisor. The Undergraduate Committee will also forward the subsequent college feedback to the Department Advisor.

   If the performance target is not met, the Department Chair will discuss avenues for improvement in the assessment mechanisms, curriculum design, and pedagogy with instructors teaching the assessed courses as well as instructors teaching the prerequisite courses.