

Program Goals and Student Learning Outcomes
B.S. in Mathematics, Mathematics of Computation Concentration
Department of Mathematics and Statistics
University of New Mexico

1 Broad Program Goals

Upon graduation the students of the Mathematics of Computation concentration will have the following competencies:

A. Mathematics knowledge

- Demonstrate understanding of the foundations of calculus and linear algebra.
- Demonstrate the ability to think logically and critically. Specifically the student will be able to differentiate assumptions from conclusions, and be able to construct logical arguments.

B. Problem solving skills

- Demonstrate how to formulate, analyze, and solve problems in applied mathematics both through analytical and computational techniques.
- Demonstrate how to efficiently use various computing platforms to implement computational algorithms.
- Demonstrate scientific judgment and the ability to apply mathematics to problems in other fields.

C. Employment and technical skills

- Translate the undergraduate degree into a viable career path or graduate degree.
- Demonstrate oral and written communication skills.

2 List of Student Learning Outcomes (SLOs) for this Degree

- A.1 Effectively perform essential computations in linear algebra, including solving linear systems, computing the eigenvalues of a matrix, and determining linear independence.
- A.2 Compute limits and derivatives using their definitions, and use the fundamental theorem of calculus to compute definite and indefinite integrals.
- B.1 Use techniques from calculus to design analytical and numerical methods to solve applied problems, and understand the accuracy and limitations of the methods.
- B.2 Use numerical techniques, and judge their accuracy, for solving mathematical problems.
- B.3 Implement computational algorithms on, and be able to use shared and distributed memory parallel computing platforms.
- C.1 Demonstrate the proficiency in scientific computing needed for graduate programs and/or careers in science and engineering.
- C.2 Communicate well, orally and in writing, in an computational mathematics context.