

UNIVERSITY OF CALIFORNIA, RIVERSIDE

Student Learning Outcomes for the B.S. in Mathematics for Secondary School

Students completing the B.S. major will be able to:

1. master precalculus and the fundamentals of differential and integral calculus for functions of one and several variables, including the main results of vector analysis for line and surface integrals.
2. have a solid understanding of linear algebra which includes the basic material on eigenvalues and inner products, and they will also have a solid understanding of techniques for solving the standard differential equations that arise in the natural and social sciences. Furthermore, students will understand how to apply these techniques to further problems in such areas.
3. have learned how to read and write mathematical proofs, and they will be able to produce arguments that are clear, organized, syntactically correct and logically sound.
4. have a deeper understanding mathematical topics that are central to elementary and secondary school mathematics, including some higher level courses that are also required of other mathematics majors. These include more sophisticated approaches to number systems and their algebraic properties, classical geometry, and the history of mathematics. Furthermore, students will have a deeper understanding of at least one topic from the list: basic abstract algebra, the theoretical framework for calculus, complex variables, differential equations, probability theory, optimization and game theory, computational mathematics, geometry (including topology and differential geometry), and applied mathematics.
5. have a basic understanding of standard topics from the mathematical, natural and social sciences which use mathematics, and they will understand topics from social science and education courses that are needed to manage their teaching assignments successfully.

Program Website: <http://cnasstudent.ucr.edu/majors/secondary.html>