



Secondary Mathematics Education

College of Education

Requirements for Program

This B.A. includes completion of an approved plan in the academic specialty teaching of mathematics, grades 8-12. The approved major in the academic specialties for teaching is entitled "Mathematics major for secondary education," to distinguish it from the Arts & Sciences major. No certification is awarded with the B.A. Students desiring to go on to Masters in Education with Initial Certification must apply to The Graduate School and apply to the Secondary Mathematics Program Faculty in the spring of their senior year.

To receive the B.A. degree, students must: (1) complete the University Studies Program; (2) complete at least 128 semester hours; (3) complete one of the secondary mathematics education plans; (4) attain a grade-point average of at least 2.50 overall and in the chosen major/minor/support areas; and (5) complete 100 hours of fieldwork with adolescents through the required three hour course:

EDC 362 Field Experiences in Secondary Education 3

The certification program in secondary mathematics education, grades 8-12, extends and enhances the conceptual framework of the College of Education by providing the opportunities and experiences necessary for beginning teachers to reflect on the perspective of the schools and the profession. Indeed, the National Council of Teachers of Mathematics (NCTM), the principal professional organization for the mathematics education program, has for the past decade promoted teaching that fosters the development of students' abilities to explore, conjecture, and reason logically, as well as the ability to use a variety of mathematical methods to solve non-routine problems. Teaching to meet this goal requires a great deal of reflective decision making, because what students learn depends to a large extent on how it has been learned. This certification program strives to blend the learning of mathematics with the learning of pedagogy.

Continuous Assessment

1. All secondary education majors must be admitted to advanced standing after completing 60 hours. Advanced standing requires (a) 2.50 minimum GPA overall, and (b) review by a program faculty advisor for secondary mathematics education.

2. Because certification occurs through the Masters in Education including certification (MIC), students should be aware that they will need to be formally admitted to the MIC program. Admission/Retention/Exit regulations for all teacher certification programs are specified in the section "Admission, Retention and Exit from Teacher Education Programs" on page 145 of the 2003-2004 UK Bulletin.

3. Oral and written communication skills of applicants for the MIC program in mathematics education will be assessed at the time of the interview, and through the entrance portfolio.

4. At exit from the secondary mathematics education major, grades 8-12, students will:

- a. demonstrate understanding of mathematical concepts and procedures and the connections among them;
b. use multiple representations of mathematical concepts and procedures;
c. reason mathematically and solve mathematical problems;
d. communicate mathematics effectively at different levels of formality; and
e. use historical, cultural, and contemporary perspectives in mathematics discourse.

Statement on Student Teaching

There is no student teaching required for completion of the secondary mathematics education, grades 8-12, major. Student teaching occurs as part of the Masters in Education with certification.

University Studies Requirements

University Studies may be met by following the courses listed in the University Studies section of the 2003-2004 UK Bulletin, with the exception that PSY 100 (Introduction to Psychology) must be taken in the social sciences component, and MA 113 is also required.

Program Related Studies (15 hours)

EDC 362 Field Experiences in Secondary Education 3
CS 101 Introduction to Computing I 3
STA 291 Statistical Method 3
EDC 421 Survey of Secondary Mathematics Curriculum 3
Natural Science (choose one course in an area different from the USP requirement) 3

Majors and Minors (66 hours)

Plan 1

Major in mathematics for secondary education (36 hours), with a university-approved minor* (18-21 hours) in biology, chemistry, computer science, geology, or physics.

*University approved minors must be planned with an advisor in the appropriate department if the student wishes to have it recorded on the UK transcript.

Plan 2

Major in mathematics for secondary education with two 15-hour support areas in biology, chemistry, computer science, geology, English, foreign language, psychology, physics, sociology, or theatre arts (30 hours).

Plan 3

Major in mathematics for secondary education (36 hours) with 30 semester hours in astronomy, biology, chemistry, computer science, geology, economics, engineering, drawing, physics, or statistics (30 hours).

Mathematics Major for Secondary Education, Grades 8-12 (36 hours)

Required

MA 113 Calculus I 4
MA 114 Calculus II 4
MA 213 Calculus III 4
MA 261 Introduction to Number Theory 3
MA 310 Mathematical Problem Solving for Teachers 3
MA 341 Topics in Geometry 3
MA 320 Introductory Probability 3
MA 322 Matrix Algebra and Its Applications 3
MA 330 History of Mathematics 3
Select six hours from the following:
MA 214 Calculus IV 3
MA 321 Introduction to Numerical Methods 3
MA 351 Elementary Topology I 3
MA 361 Elementary Modern Algebra I 3
MA 415G Graph Theory 3
MA 416G Principles of Operations Research I 3
Electives 3-8