

Combined Major in Mathematical Economics

1. This will be a major satisfying the requirements of the Bachelor of Science degree in the School of Arts & Sciences. The total number of hours for this major is 49.
2. The program will be based in both the Economics Department and the Mathematics and Computer Science Department. A coordinating committee consisting of faculty from both departments will jointly administer it.
3. All courses except the senior capstone experience are courses that are in the catalog now.
4. This combined major is offered at many liberal arts schools. Examples include Wake Forest, Furman, Colgate, Rice, Wesleyan, and Dartmouth. An important audience for this major consists of students who are interested in graduate school in Economics. The following is an excerpt from the Furman University webpage:

The Committee on Graduate Education in Economics (COGEE) conducted a review of graduate education in economics and reported its findings in the September 1991 issue of the *Journal of Economic Literature*. COGEE asked faculty members, graduate students, and recent Ph.D.'s to rank the most important skills needed to be successful in the study of graduate economics. Most important were analytical skills and mathematics, followed by critical judgment, the ability to apply theory, and computational skills.

Mathematics is an integral part of the preparation for graduate study in economics. Calculus through multivariate analysis plus linear algebra and probability and statistics would provide adequate preparation. Thorough preparation in mathematics is as important as your economic courses. In fact, an economics major is not required. However, you should plan to take macro theory and micro theory to be sure that economics is what you want to study.

The mathematics program sees a second reason for this major. This program has many more minors than majors (a 4-to-1 ratio). At its last retreat the mathematics faculty began to discuss ways to provide a richer experience for our minors. They discovered that over half of their minors have majors in the Business Schools (many receiving BSBA degrees). (Approximately 25% of these students are economics students.) The proposed major is more than a double minor. We hope that these mathematics minors will constitute a portion of the new combined major audience, thus giving them (from the mathematics perspective) a richer, more integrated experience than they receive as a mathematics minor.

5. Capstone experience. The senior capstone experience will be a course integrating the two areas and will involve faculty from both departments. This is an essential part of the combined major. The experience will most likely take the form of an independent study, approved by the joint committee overseeing the program.
6. Students who major in Mathematical Economics will be prohibited from a second major in either mathematics or economics. Mathematical Economics can however serve as a second major for students in other majors or for students who are seeking other degrees (BA or Leadership or Business) as long as the first major is not mathematics or economics. International Studies with a focus on International Economics is an acceptable second major.

7. A grade point average in the coursework comprising the major of at least 2.00 is required with no course grade below a C- (1.7).

Proposed new major in **Mathematical Economics** satisfying the requirements for a Bachelor of Science degree (**49 credit hours**)

Required Courses:

Math

211 Calculus I
212 Calculus II
235 Multivariate Calculus
245 Linear Algebra
329 Probability
330 Mathematical Statistics

Economics

101 Principles of Microeconomics
102 Principles of Macroeconomics
271 Microeconomic Theory
272 Macroeconomic Theory
340 Econometrics (prereq. Math 330)
341 Mathematical Economics

Computer Science

150 Introduction to Computing (4 hour course)

A senior capstone course (Econ 380)

Electives:

One 300 level elective from Economics

One 300 level Mathematics class chosen from Math 310 (Advanced Calculus), Math 312 (Differential Equations) , Math 320 (Real Analysis), Math 323 (Discrete Mathematical Models) , Math 328 (Numerical Analysis)