

Recommended Mathematics Preparation for Graduate School in Economics

Students who are interested in pursuing a graduate degree in economics should be aware that a solid background in mathematics is critical for success in any reputable economics Ph.D. program. Listed below are math courses recommended by I.U. economics professors who are teaching graduate courses in micro theory, macro theory, and econometrics. Check with the Department of Mathematics regarding when these courses, or honors sections of these courses, are offered. Given the number of math credits contained in this list, it makes sense to consider a double major in economics and mathematics, the economics and mathematics interdepartmental major, or a major in economics and a minor in mathematics.

Minimum preparation:

Calculus – M211, M212 (or M213), and M311

Linear Algebra – M303

Probability and Statistics – M365 (substitutes for E370 in the economics major, but does not count as an economics course)

Good preparation – all of the above courses plus:

Differential Equations – M343 and M344

Linear Transformations – M409

Real Analysis – M413 and M414

Excellent preparation – all of the above courses plus:

Probability Theory – M463 and M464

Other courses to consider if time permits:

Elementary Computational Methods – M371

Elementary Complex Variables – M415

Metric Space Topology – M420

Introduction to Mathematical Statistics – M466

Numerical Analysis – M471 and M472

Real Variables – M511 and M512

In the realm of courses within the Economics major, Game Theory (E327) and the undergraduate Econometrics sequence (E471 and E472) are recommended. This is in addition to the introductory and intermediate micro and macro theory courses (E201, E202, E321, E322) and at least two other elective courses numbered above E322.

Unusually well-motivated and well-prepared undergraduate economics majors who are aiming for a highly-ranked economics Ph.D. program can, with special permission from the Director of Graduate Studies, enroll in first-year Ph.D. classes such as E520, E521, and E522.