

## Economics and Mathematics

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The Economics and Mathematics major is intended for students with a strong interest in both mathematics and economics, and for students who may pursue a graduate degree in economics.

### PREREQUISITES

The major has prerequisites in both mathematics and economics: MATH 1200; ECON 1110 or 1115; and ECON 1111 or 1116. Upper level economics courses may be substituted for prerequisite economics courses. With prior written permission from the Mathematics DUS, students who completed multivariable calculus during high school may substitute a higher level mathematics course in the same area. Upper-level courses substituted for prerequisites do not count toward the total of twelve term courses (beyond the introductory level in economics and mathematics) required for the major.

### REQUIREMENTS OF THE MAJOR

See Links to the attribute indicating courses approved for Economic theory seminar requirements.

A total of twelve term courses is required beyond the introductory level in economics and in mathematics: seven term courses in economics numbered above 2120, and five term courses in mathematics numbered above 2250 (except MATH 4700, MATH 2410 and MATH 2420 - see below). These courses must include:

1. One intermediate microeconomics course (ECON 2125 is preferred, but ECON 2121 is also acceptable) and one intermediate macroeconomics course (ECON 2126 is preferred, but ECON 2122 is also acceptable).
2. Two mathematical economics courses, ECON 3351 or 4425 and one of ECON 3350, 4417, or 4433.
3. Two courses in econometrics, ECON 2135 (or equivalent) and ECON 2136. ECON 2135 can be replaced by S&DS 2410 and 2420, in which case they count as one economics course and not as mathematics courses. Neither S&DS 2410 nor 2420 can be counted toward the major in parallel to ECON 2135.
4. One proof-based linear algebra course (MATH 2250 or 2260) and one real analysis course (MATH 2550 or 2560).
5. A senior seminar as described in the "Senior requirement" section below. MATH 4800 or 4810 counts toward the required mathematics courses; an Economic theory seminar counts toward the required economics courses.

A course must be listed with a MATH number to count toward the mathematics requirements—substitutions from other departments are not permitted. Graduate mathematics courses level 5000–5999 may be counted as electives; graduate mathematics courses level 6000 or above may not be counted.

**Distinction in the Major** To be considered for Distinction in the Major, students must meet minimum grade standards, as specified under "Honors" in The Undergraduate Curriculum, and submit a senior essay in Economics that earns a grade of A or A-. For details on the senior essay in Economics see Economics. All courses beyond the introductory level in Mathematics and Economics are counted in the computation of grades for Distinction.

**Credit/D/Fail** No course taken Credit/D/Fail may be applied toward the requirements of the major, including the prerequisites.

**Outside credit** Courses taken after matriculation at Yale at another institution or during an approved summer or term-time study abroad program may count toward the major requirements with DUS approval.

#### SENIOR REQUIREMENT

Students must take either a senior seminar in mathematics, MATH 4800 or 4810, or an Economic theory seminar, designated as YC ECON Theory Seminar in Yale Course Search. A senior essay in Economics is optional.

#### ADVISING

Students interested in the major should consult both DUSs, and verify with each that their proposed program meets the relevant guidelines.

### SUMMARY OF MAJOR REQUIREMENTS

**Prerequisites** MATH 1200; ECON 1110 or 1115; ECON 1111 or 1116

**Number of courses** 12 term courses beyond prerequisites (incl senior req)

**Distribution of courses** 7 economic courses above 2120 and 5 math courses above 2250 (excluding MATH 4700, 2410, and 2420)

**Specific courses required** ECON 2125 or 2121; ECON 2126 or 2122; ECON 2135; ECON 2136; ECON 3350 or 4417 or 4433; ECON 3351 or 4425; MATH 2250 or MATH 2260; MATH 2550 or MATH 2560, as specified

**Substitution permitted** S&DS 2410 and 2420 for ECON 2135, with permission of Economics DUS

**Senior requirement** Senior sem in math (MATH 4800 or MATH 4810) or an Economics theory seminar