

# Progress Toward Completion of the Mathematics Major

## Economics Concentration

Arts and Sciences students may be admitted to the math major after successfully completing a semester of multivariable calculus, a semester of linear algebra, and a 3- or 4-credit computer programming course. Applications are available in 310A Malott Hall.

Student's Name	Net ID	Faculty Advisor
_____	_____	_____
<b>Courses needed to complete the major</b>		
_____		initials _____
_____		date _____

Math majors must complete **9 courses** for the major, as described in items 1–3 below, with a **minimum grade of C–**. MATH courses numbered 5000–5999 do not count. No course may be used to satisfy more than one requirement.

\_\_\_\_\_ At least two of the MATH courses taken must be at the 4000 level (or above).

### 1. Two Courses in Algebra. ( \_\_\_ transfer credit applied, see reverse)

- \_\_\_\_\_ MATH 3320 Introduction to Number Theory
- \_\_\_\_\_ MATH 3340\* Abstract Algebra
- \_\_\_\_\_ MATH 3360\* Applicable Algebra
- \_\_\_\_\_ MATH 4310\* Linear Algebra
- \_\_\_\_\_ MATH 4315\* Linear Algebra with Supplements
- \_\_\_\_\_ MATH 4330\* Honors Linear Algebra
- \_\_\_\_\_ MATH 4340\* Honors Introduction to Algebra
- \_\_\_\_\_ MATH 4370 Computational Algebra
- \_\_\_\_\_ MATH 4500 Matrix Groups
- \_\_\_\_\_ MATH 4560 Geometry of Discrete Groups

### 2. Two Courses in Analysis. ( \_\_\_ transfer credit applied, see reverse)

- \_\_\_\_\_ MATH 3110\* Introduction to Analysis
- \_\_\_\_\_ MATH 3210 Manifolds & Differential Forms
- \_\_\_\_\_ MATH 3230\* Introduction to Differential Equations
- \_\_\_\_\_ MATH 4130\* Honors Intro Analysis I
- \_\_\_\_\_ MATH 4140 Honors Intro Analysis II
- \_\_\_\_\_ MATH 4180\* Complex Analysis
- \_\_\_\_\_ MATH 4200\* Differential Equations and Dynamical Systems
- \_\_\_\_\_ MATH 4210\* Nonlinear Dynamics and Chaos [also MAE 5790]
- \_\_\_\_\_ MATH 4220\* Applied Complex Analysis
- \_\_\_\_\_ MATH 4250 Numerical Analysis and Differential Equations [also CS 4210]
- \_\_\_\_\_ MATH 4260 Numerical Analysis: Linear & Nonlinear Equations [also CS 4220; co-meets w/CS 5223]
- \_\_\_\_\_ MATH 4280\* Introduction to Partial Differential Equations

**\*Forbidden Overlaps:** Due to an overlap in content, students will receive credit for only one course in each group:

- (1) MATH 3110, 4130; (2) MATH 3230, 4280; (3) MATH 3340, 3360; (4) MATH 3340, 4340; (5) MATH 4180, 4220; (6) MATH 4200, 4210; (7) MATH 4310, 4315, 4330; (8) MATH 4710, ECON 3130, BTRY 3080; (9) MATH 4720, ECON 3130, BTRY 4090; (10) MATH 4810, 4860.

**3. Concentration in Economics.** ( \_\_\_ transfer credit applied, see below)

Five additional courses from (vii), (viii) and (ix) below.

(vii) At least one MATH course numbered 3000 or above:

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(viii) At least three ECON courses with significant mathematical content.

- \_\_\_\_\_ ECON 3130\* Statistics and Probability *or* ECON 6190 Econometrics I
- \_\_\_\_\_ ECON 3140 Econometrics *or* ECON 6200 Econometrics II
- \_\_\_\_\_ ECON 3810 Decision Theory I
- \_\_\_\_\_ ECON 3825 Networks II: Market Design [also CS 4852, INFO 4220; co-meets with INFO 6220]
- \_\_\_\_\_ ECON 4020 Game Theory
- \_\_\_\_\_ ECON 4050 Intertemporal Economics
- \_\_\_\_\_ ECON 4070 Equilibrium and Welfare Economics
- \_\_\_\_\_ ECON 4110 Cross Section and Panel Econometrics
- \_\_\_\_\_ ECON 4907 The Economics of Asymmetric Information and Contracts
- \_\_\_\_\_ ECON 6090 Microeconomic Theory I
- \_\_\_\_\_ ECON 6100 Microeconomic Theory II
- \_\_\_\_\_ ECON 6130 Macroeconomics I
- \_\_\_\_\_ ECON 6140 Macroeconomics II

NOTE: Undergraduate enrollment in ECON graduate courses requires permission of instructor.

(ix) Courses in ORIE with significant mathematical content dealing with material of interest in economics.

- \_\_\_\_\_ ORIE 3300 Optimization I
- \_\_\_\_\_ ORIE 3310 Optimization II
- \_\_\_\_\_ ORIE 4350 Introduction to Game Theory
- \_\_\_\_\_ ORIE 4600 Introduction to Financial Engineering
- \_\_\_\_\_ ORIE 4740 Statistical Data Mining I
- \_\_\_\_\_ ORIE 5600 Financial Engineering with Stochastic Calculus I
- \_\_\_\_\_ ORIE 5610 Financial Engineering with Stochastic Calculus II

\_\_\_\_\_ (approved by faculty advisor)

**Transfer Credit / Study Abroad Courses Applied to the Major**

Course Number & Title	Institution	Requirement
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 (7) MATH 4310, 4315, 4330; (8) MATH 4710, ECON 3130, BTRY 3080; (9) MATH 4720, ECON 3130, BTRY 4090; (10) MATH 4810, 4860.