Mathematics-Economics

The Mathematics Economics concentration is designed to give a background in economic theory plus the mathematical tools needed to analyze and develop additional theoretical constructions. The emphasis is on the abstract theory itself. Students may choose either the standard or the professional track, both award a Bachelor of Arts degree.

### Standard Mathematics-Economics Concentration

**Economics**
- ECON 1130 Intermediate Microeconomics (Mathematical) **1**
- ECON 1210 Intermediate Macroeconomics **1**
- ECON 1630 Mathematical Econometrics I **1**

Two courses from the "mathematical-economics" group: **2**
- ECON 1170 Welfare Economics and Social Choice Theory
- ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
- ECON 1255 Unemployment: Models and Policies
- ECON 1460 Industrial Organization (Mathematical)
- ECON 1470 Bargaining Theory and Applications
- ECON 1490 Designing Internet Marketplaces
- ECON 1545 Topics in Macroeconomics, Development and International Economics
- ECON 1640 Mathematical Econometrics II
- ECON 1660 Big Data
- ECON 1670 Advanced Topics in Econometrics
- ECON 1750 Investments II
- ECON 1805 Economics in the Laboratory
- ECON 1820 Theory of Behavioral Economics
- ECON 1850 Theory of Economic Growth
- ECON 1860 The Theory of General Equilibrium
- ECON 1870 Game Theory and Applications to Economics

One course from the "data methods" group: **1**
- ECON 1301 Economics of Education I
- ECON 1310 Labor Economics
- ECON 1315 Health, Education, and Social Policy
- ECON 1340 Economics of Global Warming
- ECON 1355 Environmental Issues in Development Economics
- ECON 1360 Health Economics
- ECON 1375 Inequality of Opportunity in the US
- ECON 1400 The Economics of Mass Media
- ECON 1430 The Economics of Social Policy
- ECON 1480 Public Economics
- ECON 1510 Economic Development
- ECON 1530 Health, Hunger and the Household in Developing Countries
- ECON 1629 Applied Research Methods for Economists
- ECON 1640 Mathematical Econometrics II
- ECON 1660 Big Data
- ECON 1670 Advanced Topics in Econometrics
- ECON 1825 Behavioral Economics and Public Policy
- ECON 1830 Behavioral Finance

Two additional 1000-level economics courses **2**

**Mathematics**
- Calculus: MATH 0180 or higher
- Linear Algebra - one of the following:
  - MATH 0520 Linear Algebra
  - MATH 0540 Honors Linear Algebra
- Probability Theory - one of the following:
  - MATH 1610 Probability
  - MATH 1620 Mathematical Statistics
  - APMA 1650 Statistical Inference I
- Analysis - one of the following:
  - MATH 1010 Analysis: Functions of One Variable
  - MATH 1130 Functions of Several Variables
  - MATH 1140 Functions Of Several Variables
- Differential Equations - one of the following:
  - MATH 1110 Ordinary Differential Equations
  - MATH 1120 Partial Differential Equations

One additional course from the Probability, Analysis, and Differential Equations courses listed above **1**

**Total Credits: 14**

1. Or ECON 1110 with permission. For students matriculating at Brown in Fall 2021 or later, note that if ECON 1110 is used, then one additional course from the mathematical-economics group will be required.
2. No course may be "double-counted" to satisfy both the mathematical-economics and data methods requirements.
3. Students may use either ECON 1070 or ECON 1090 toward the concentration, but not both. Note that ECON 1620, ECON 1960, and ECON 1970 (independent study) cannot be used for concentration credit. However, ECON 1620 and ECON 1960 can be used for university credit and up to two 1970s may be used for university credit.
4. MATH 1130 is a prerequisite for MATH 1140.

**Honors:**

Students who meet stated requirements are eligible to write an honors thesis in their senior year. Students should consult the listed honors requirements of whichever of the two departments their primary thesis advisor belongs to, at the respective departments' websites.

**Professional Track:**

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete full-time professional experiences doing work that is related to their concentration programs, totaling 2-6 months, whereby each internship must be at least one month in duration in cases where students choose to do more than one internship experience. Such work is normally done at a company, but may also be at a university under the supervision of a faculty member. Internships that take place between the end of the fall and the start of the spring semesters cannot be used to fulfill this requirement.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student's concentration advisor:
- Which courses were put to use in your summer's work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.

Mathematics-Economics
Would you recommend your summer experience to other Brown students? Explain.