Mathematics-Economics

The Mathematical 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.

Standard Mathematics-Economics Concentration (through the class of 2015):

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

Two from the "mathematical-economics" group:
- ECON 1170 Welfare Economics and Social Choice Theory
- ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
- ECON 1465 Market Design: Theory and Applications
- ECON 1470 Bargaining Theory and Applications
- ECON 1640 Econometrics II
- ECON 1650 Financial Econometrics
- ECON 1750 Investments II
- ECON 1759 Data, Statistics, Finance
- ECON 1810 Economics and Psychology
- ECON 1820 Behavioral Economics
- ECON 1850 Theory of Economic Growth
- ECON 1860 The Theory of General Equilibrium
- ECON 1870 Game Theory and Applications to Economics

One additional 1000-level economics course 1

**Mathematics**

At least two calculus courses through MATH 0180 or its equivalent. 2
- MATH 0520 Linear Algebra 1
- or MATH 0540 Honors Linear Algebra

Select one of the following Options: 3

**Option A**
- MATH 1610 Probability
- MATH 1620 Mathematical Statistics

One course from the "advanced mathematics" group, as follows:
- MATH 1010 Analysis: Functions of One Variable
- MATH 1110 Ordinary Differential Equations
- MATH 1120 Partial Differential Equations
- MATH 1130 Functions of Several Variables
- MATH 1140 Functions Of Several Variables

**Option B**
- APMA 1650 Statistical Inference I

Two courses from the "advanced mathematics" group, as follows:
- MATH 1010 Analysis: Functions of One Variable
- MATH 1110 Ordinary Differential Equations
- MATH 1120 Partial Differential Equations
- MATH 1130 Functions of Several Variables
- MATH 1140 Functions Of Several Variables

Total Credits 12

1 Or ECON 1110 with permission.

Standard Mathematics-Economics Concentration (class of 2016 and beyond):

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

Two courses from the "mathematical-economics" group: 2 2
- ECON 1170 Welfare Economics and Social Choice Theory
- ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
- ECON 1465 Market Design: Theory and Applications
- ECON 1470 Bargaining Theory and Applications
- ECON 1640 Econometrics II
- ECON 1650 Financial Econometrics
- ECON 1750 Investments II
- ECON 1759 Data, Statistics, Finance
- ECON 1810 Economics and Psychology
- ECON 1820 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: 2 1
- ECON 1301 Economics of Education I
- ECON 1305 Economics of Education: Research
- ECON 1310 Labor Economics
- ECON 1360 Health Economics
- ECON 1410 Urban Economics
- ECON 1480 Public Economics
- ECON 1510 Economic Development
- ECON 1520 The Economic Analysis of Institutions
- ECON 1530 Health, Hunger and the Household in Developing Countries
- ECON 1629 Applied Research Methods for Economists
- ECON 1640 Econometrics II
- ECON 1650 Financial Econometrics
- ECON 1759 Data, Statistics, Finance
- ECON 1765 Finance, Regulation, and the Economy: Research

Two additional 1000-level economics courses 2

**Mathematics**

Calculus: MATH 0180 or higher 1
- Lineear Algebra - one of the following: 1
  - MATH 0520 Linear Algebra
  - MATH 0540 Honors Linear Algebra

Probability Theory - one of the following: 1
- MATH 1610 Probability
- MATH 1620 Mathematical Statistics
- APMA 1650 Statistical Inference I

Analysis - one of the following: 1
- 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: 1
- 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
Honors and Capstone Requirement:
Admission to candidacy for honors in the concentration is granted on the following basis: 3.7 GPA for Economics courses, and 3.5 GPA overall. To graduate with honors, a student must write an honors thesis in senior year following the procedures specified by the concentration (see Economics Department website). Beginning with the class of 2016, students not writing an honors thesis must complete an alternative senior capstone project and obtain approval of a faculty sponsor.

Professional Track (applies irrespective of graduation year):
The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four month full-time professional experiences, doing work that is relevant to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

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.
• Would you recommend your summer experience to other Brown students? Explain.