Economics

Chair
David N. Weil

Economics is a social scientific discipline that both studies economic activity in its narrower sense and develops methodologies for studying decision-making in a broader set of domains. Economic activity narrowly construed is that subset of people’s activities primarily concerned with the production and consumption of goods and services, the allocation of resources, goods and asset markets, the money supply, and taxation.

More broadly, economics provides a theory of rational choice that has been useful in fields ranging from the study of politics and healthcare to theoretical biology. In recent years, economists have been expanding their study of choice to also include the interaction of cognitive limitations, decision heuristics, and psychological and social influences with the rational aspects of choice.

For additional information, please visit the department’s website: http://www.brown.edu/Departments/Economics/

Economics Concentration Requirements

Economics is the study of how individuals, businesses, and governments allocate resources to satisfy their objectives. The study of economics helps students understand markets, firms, financial organizations, and public debate about economic policy, including taxation, government expenditure, trade, globalization, health, and welfare. The concentration in Economics prepares students for graduate study in fields such as business and law, for graduate study leading to teaching and research in economics, and can be a steppingstone to employment in business, finance, non-profit, and government organizations. Students may choose either the standard or the professional track.

Students are required to begin with ECON 0110, an introductory course that stresses the economic problems of our society, and the vocabulary and principles of economic analysis. Intermediate level courses in microeconomics (ECON 1110 or ECON 1130), macroeconomics (ECON 1210), and econometrics (ECON 1620 followed by ECON 1629 [http://bulletin.brown.edu/economics/Inline%20Course]) or ECON 1630 (http://bulletin.brown.edu/economics/Inline%20Course)) round out the list of foundation courses for the concentration. Economics students must also fulfill a calculus requirement.

The economics department sponsors a number of concentration options. The most popular is the standard economics concentration, described below. Three additional concentration options are administered jointly with other departments and are described separately under their respective titles. They are the concentrations in applied mathematics–economics, in mathematical economics, and in computer science–economics. The first two are especially recommended for students interested in graduate study in economics.

The department offers many of the required courses in an interdepartmental concentration called Business, Entrepreneurship and Organizations (CEO). CEO is jointly run by the departments of economics and sociology, and the school of engineering. CEO has three possible "tracks," of which the business economics track is most closely related to economics. Please contact the CEO administrator for more details, including information about advising in that concentration.

Standard Economics Concentration

Mathematics Course Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
<td>1</td>
</tr>
<tr>
<td>or MATH 0170</td>
<td>Advanced Placement Calculus</td>
<td></td>
</tr>
<tr>
<td>or ECON 0170</td>
<td>Essential Mathematics for Economics</td>
<td></td>
</tr>
</tbody>
</table>

A higher-level math course.

Economics Course Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
<td></td>
</tr>
</tbody>
</table>

At least five additional 1000-level Economics courses. 2  

Total Credits 11

1 Note that certain advanced economics courses may impose additional mathematical prerequisites. The standard mathematics requirement may be met through Advanced Placement tests, but "placing into" a higher level mathematics course than MATH 0100, without actually taking that higher level course, does not satisfy the requirement. The AP mathematics credit must appear on your Brown transcript.

2 Note that ECON 1960 (thesis) and ECON 1970 do not count for concentration credit.

3 If placing out of ECON 0110 with AP or IB test scores, one must take an additional 1000-level course (6 instead of 5).

All concentrators in economics programs are encouraged to consult their concentration advisors regularly. Economics concentrators who wish to study abroad should consult first with the department transfer credit advisor.

Honors

Students who wish to enroll in the honors program in economics should consult the department’s undergraduate guide (available on its web site) to obtain a complete description of the requirements. See the description of Capstone Projects there, as well. Courses taken to prepare an honors thesis are in addition to the regular concentration requirements.

Professional Track

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 related 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.

Applied Mathematics-Economics Concentration Requirements

The Applied Mathematics-Economics concentration is designed to reflect the mathematical and statistical nature of modern economic theory and empirical research. This concentration has two tracks. The first is the advanced economics track, which is intended to prepare students for graduate study in economics. The second is the mathematical finance track, which is intended to prepare students for graduate study in finance, or for careers in finance or financial engineering. Both tracks have A.B.
degree versions and Sc.B. degree versions, as well as a Professional track option.

**Standard Program for the A.B. degree (Advanced Economics track):**

**Prerequisites:**
- MATH 0100 Introductory Calculus, Part II
- MATH 0520 Linear Algebra

**Course Requirements:**

**Applied Mathematics Requirements**

(a)  

Select one of the following:
- APMA 0160 Introduction to Scientific Computing (preferred)
- CSCI 0040 Introduction to Scientific Computing and Problem Solving (preferred)
- CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
- CSCI 0170 Computer Science: An Integrated Introduction

Select one of the following:
- APMA 1200 Operations Research: Probabilistic Models
- APMA 1210 Operations Research: Deterministic Models
- APMA 1650 Statistical Inference I
- or APMA 1655 Statistical Inference I

(b)  
- APMA 1200 Operations Research: Probabilistic Models
- APMA 1210 Operations Research: Deterministic Models
- APMA 1330 Applied Partial Differential Equations II
- APMA 1360 Topics in Chaotic Dynamics
- APMA 1660 Statistical Inference II
- APMA 1690 Computational Probability and Statistics
- APMA 1720 Monte Carlo Simulation with Applications to Finance
- APMA 1740 Recent Applications of Probability and Statistics
- MATH 1010 Analysis: Functions of One Variable

**Economics Requirements:**
- ECON 1130 Intermediate Microeconomics (Mathematical)
- ECON 1210 Intermediate Macroeconomics
- ECON 1630 Econometrics I
- Two 1000-level courses from the "mathematical-economics" group:
- ECON 1170 Welfare Economics and Social Choice Theory
- ECON 1220 Monetary and Fiscal Policy
- ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
- ECON 1460 Industrial Organization
- ECON 1465 Market Design: Theory and Applications
- ECON 1470 Bargaining Theory and Applications
- ECON 1490 Designing Internet Marketplaces
- ECON 1640 Econometrics II
- ECON 1650 Financial Econometrics

One 1000-level course from the "data methods" group:  
- ECON 1301 Economics of Education I
- ECON 1305 Economics of Education: Research
- ECON 1310 Labor Economics
- 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 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 1660 Big Data
- ECON 1759 Data, Statistics, Finance
- ECON 1765 Finance, Regulation, and the Economy: Research

Total Credits: 13

1 No course may be used to simultaneously satisfy (a) and (b).
2 APMA 0330 and APMA 0340 may be substituted with advisor approval.
3 Or ECON 1110 with permission.
4 No course may be used to simultaneously satisfy the "mathematical economics" and the "data methods" requirements.

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**Standard Program for the Sc.B. degree (Advanced Economics track):**

**Prerequisites:**
- MATH 0100 Introductory Calculus, Part II
- MATH 0520 Linear Algebra

**Course Requirements:**

**Applied Mathematics Requirements**

(a)  

Select one of the following:
- APMA 0160 Introduction to Scientific Computing (preferred)
- CSCI 0040 Introduction to Scientific Computing and Problem Solving (preferred)
- CSCI 0150 Introduction to Object-Oriented Programming and Computer Science

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ECON 1660 Big Data
ECON 1670 Advanced Topics in Econometrics
ECON 1740 Mathematical Finance
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
ECON 1301 Economics of Education I
ECON 1305 Economics of Education: Research
ECON 1310 Labor Economics
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 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 1660 Big Data
ECON 1759 Data, Statistics, Finance
ECON 1765 Finance, Regulation, and the Economy: Research

One additional 1000-level economics course 1

Total Credits: 13
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0170</td>
<td>Computer Science: An Integrated Introduction</td>
</tr>
<tr>
<td>APMA 1200</td>
<td>Operations Research: Probabilistic Models</td>
</tr>
<tr>
<td>APMA 1210</td>
<td>Operations Research: Deterministic Models</td>
</tr>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>APMA 1330</td>
<td>Applied Partial Differential Equations II</td>
</tr>
<tr>
<td>APMA 1360</td>
<td>Topics in Chaotic Dynamics</td>
</tr>
<tr>
<td>APMA 1660</td>
<td>Statistical Inference II</td>
</tr>
<tr>
<td>APMA 1690</td>
<td>Computational Probability and Statistics</td>
</tr>
<tr>
<td>APMA 1720</td>
<td>Monte Carlo Simulation with Applications to Finance</td>
</tr>
<tr>
<td>APMA 1740</td>
<td>Recent Applications of Probability and Statistics</td>
</tr>
<tr>
<td>MATH 1010</td>
<td>Analysis: Functions of One Variable</td>
</tr>
</tbody>
</table>

**Economics Requirements:**

- ECON 1130 Intermediate Microeconomics 1 (Mathematical) 
- ECON 1210 Intermediate Macroeconomics 1
- ECON 1630 Econometrics I 1
- Three 1000-level courses from the "mathematical-economics" group: 3
  - ECON 1170 Welfare Economics and Social Choice Theory
  - ECON 1220 Monetary and Fiscal Policy
  - ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
  - ECON 1460 Industrial Organization
  - ECON 1465 Market Design: Theory and Applications
  - ECON 1470 Bargaining Theory and Applications
  - ECON 1490 Designing Internet Marketplaces
  - ECON 1640 Econometrics II
  - ECON 1650 Financial Econometrics
  - ECON 1660 Big Data
  - ECON 1670 Advanced Topics in Econometrics
  - ECON 1740 Mathematical Finance
  - 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 1000-level course from the "data methods" group: 1

- ECON 1301 Economics of Education I
- ECON 1305 Economics of Education: Research
- ECON 1310 Labor Economics
- ECON 1355 Environmental Issues in Development Economics
- ECON 1360 Health Economics
- ECON 1375 Inequality of Opportunity in the US

- ECON 1300 The Economics of Mass Media
- 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 1660 Big Data
- ECON 1759 Data, Statistics, Finance
- ECON 1765 Finance, Regulation, and the Economy: Research

Two additional 1000-level economics courses 2

Total Credits 16

1. No course may be used to simultaneously satisfy (a) and (b).
2. APMA 0330 and APMA 0340 may be substituted with advisor approval.
3. Or ECON 1110 with permission.
4. No course may be used to simultaneously satisfy the "mathematical economics" and the "data methods" requirements.
5. Note that Econ 1620, 1960, and 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.

**Standard program for the A.B. degree (Mathematical Finance track):**

**Prerequisites:**

- MATH 0100 Introductory Calculus, Part II
- MATH 0520 Linear Algebra

**Course Requirements:** 13 Courses: 6 Applied Math and 7 Economics

**Applied Mathematics Requirements**

(a) 2

- APMA 0350 Applied Ordinary Differential Equations
- & APMA 0360 and Applied Partial Differential Equations I

Select one of the following: 1

- APMA 0360 Applied Partial Differential Equations I
- APMA 0160 Introduction to Scientific Computing (preferred)
- CSCI 0040 Introduction to Scientific Computing and Problem Solving (preferred)
- CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
- CSCI 0170 Computer Science: An Integrated Introduction

(b) 1

- APMA 1200 Operations Research: Probabilistic Models
- APMA 1650 Statistical Inference I
- or APMA 1655 Statistical Inference I

Select one of the following: 1

- APMA 1180 Introduction to Numerical Solution of Differential Equations
- APMA 1210 Operations Research: Deterministic Models
- APMA 1330 Applied Partial Differential Equations II
- APMA 1360 Topics in Chaotic Dynamics

1 No course may be used to simultaneously satisfy (a) and (b).
2 APMA 0330 and APMA 0340 may be substituted with advisor approval.
3 Or ECON 1110 with permission.
4 No course may be used to simultaneously satisfy the "mathematical economics" and the "data methods" requirements.
5 Note that Econ 1620, 1960, and 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.
Select one 1000-level course from the "data methods" group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 1660</td>
<td>Statistical Inference II</td>
</tr>
<tr>
<td>APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>APMA 1690</td>
<td>Computational Probability and Statistics</td>
</tr>
<tr>
<td>APMA 1720</td>
<td>Monte Carlo Simulation with Applications to Finance (preferred)</td>
</tr>
<tr>
<td>APMA 1740</td>
<td>Recent Applications of Probability and Statistics</td>
</tr>
<tr>
<td>MATH 1010</td>
<td>Analysis: Functions of One Variable</td>
</tr>
</tbody>
</table>

**Economics Requirements:**

- **ECON 1130** Intermediate Microeconomics 1
- **ECON 1210** Intermediate Macroeconomics 1
- **ECON 1630** Econometrics I 1

Select two 1000-level courses from the "financial economics" group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1630</td>
<td>Financial Econometrics</td>
</tr>
<tr>
<td>ECON 1710</td>
<td>Investments I</td>
</tr>
<tr>
<td>ECON 1720</td>
<td>Corporate Finance</td>
</tr>
<tr>
<td>ECON 1730</td>
<td>Venture Capital, Private Equity, and Entrepreneurship</td>
</tr>
<tr>
<td>ECON 1740</td>
<td>Mathematical Finance</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1759</td>
<td>Data, Statistics, Finance</td>
</tr>
<tr>
<td>ECON 1760</td>
<td>Financial Institutions</td>
</tr>
<tr>
<td>ECON 1765</td>
<td>Finance, Regulation, and the Economy: Research</td>
</tr>
<tr>
<td>ECON 1770</td>
<td>Fixed Income Securities</td>
</tr>
<tr>
<td>ECON 1780</td>
<td>Corporate Strategy</td>
</tr>
<tr>
<td>ECON 1790</td>
<td>Corporate Governance and Management</td>
</tr>
</tbody>
</table>

Select one 1000-level course from the "mathematical economics" group:

<table>
<thead>
<tr>
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<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1650</td>
<td>Financial Econometrics</td>
</tr>
<tr>
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</table>

**Standard program for the Sc.B. degree (Mathematical Finance track):**

**Prerequisites:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
</tr>
</tbody>
</table>

**Course Requirements:** 16 courses: 7 Applied Math and 9 Economics

**Applied Mathematics requirements:**

(a) APMA 0350 and APMA 0360 may be substituted with advisor approval.

No course may be used to simultaneously satisfy the "financial economics," the "mathematical economics," or the "data methods" requirements.

Or ECON 1110 with permission.

Note that Econ 1620, 1960, and 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.

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<td>ECON 1790</td>
<td>Corporate Governance and Management</td>
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</table>

Select one 1000-level course from the "mathematical economics" group:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
</tr>
<tr>
<td>ECON 1220</td>
<td>Monetary and Fiscal Policy</td>
</tr>
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<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization</td>
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<tr>
<td>ECON 1465</td>
<td>Market Design: Theory and Applications</td>
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<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
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<td>Big Data</td>
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<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
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<td>Economics and Psychology</td>
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<td>Behavioral Economics</td>
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<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
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<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
</tbody>
</table>

Select one 1000-level course from the "data methods" group:

<table>
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<tr>
<td>ECON 1301</td>
<td>Economics of Education I</td>
</tr>
<tr>
<td>ECON 1305</td>
<td>Economics of Education: Research</td>
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<tr>
<td>ECON 1310</td>
<td>Labor Economics</td>
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<tr>
<td>ECON 1355</td>
<td>Environmental Issues in Development Economics</td>
</tr>
<tr>
<td>ECON 1360</td>
<td>Health Economics</td>
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<tbody>
<tr>
<td>APMA 0160</td>
<td>Introduction to Scientific Computing (preferred)</td>
</tr>
<tr>
<td>CSCI 0040</td>
<td>Introduction to Scientific Computing and Problem Solving (preferred)</td>
</tr>
<tr>
<td>CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
</tr>
<tr>
<td>CSCI 0170</td>
<td>Computer Science: An Integrated Introduction</td>
</tr>
<tr>
<td>APMA 1200</td>
<td>Operations Research: Probabilistic Models</td>
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<td>APMA 1650</td>
<td>Statistical Inference I</td>
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<tr>
<td>APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
</tbody>
</table>

(b) Select two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 1180</td>
<td>Introduction to Numerical Solution of Differential Equations</td>
</tr>
<tr>
<td>APMA 1210</td>
<td>Operations Research: Deterministic Models</td>
</tr>
<tr>
<td>APMA 1330</td>
<td>Applied Partial Differential Equations II</td>
</tr>
<tr>
<td>APMA 1360</td>
<td>Topics in Chaotic Dynamics</td>
</tr>
<tr>
<td>APMA 1660</td>
<td>Statistical Inference II</td>
</tr>
</tbody>
</table>
Select one 1000-level course from the "data methods" group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 1690</td>
<td>Computational Probability and Statistics</td>
</tr>
<tr>
<td>APMA 1720</td>
<td>Monte Carlo Simulation with Applications to Finance (preferred)</td>
</tr>
<tr>
<td>APMA 1740</td>
<td>Recent Applications of Probability and Statistics</td>
</tr>
<tr>
<td>MATH 1010</td>
<td>Analysis: Functions of One Variable</td>
</tr>
</tbody>
</table>

Economics Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Econometrics I</td>
</tr>
</tbody>
</table>

Select three 1000-level courses from the "financial economics" group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1410</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1400</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1360</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1355</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1310</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1305</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1301</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1170</td>
<td>Economics</td>
</tr>
<tr>
<td>APMA 1740</td>
<td>Economics</td>
</tr>
<tr>
<td>APMA 1690</td>
<td>Economics</td>
</tr>
<tr>
<td>APMA 1720</td>
<td>Economics</td>
</tr>
<tr>
<td>ECON 1730</td>
<td>Venture Capital, Private Equity, and Entrepreneurship</td>
</tr>
<tr>
<td>ECON 1740</td>
<td>Mathematical Finance</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1759</td>
<td>Data, Statistics, Finance</td>
</tr>
<tr>
<td>ECON 1760</td>
<td>Financial Institutions</td>
</tr>
<tr>
<td>ECON 1765</td>
<td>Finance, Regulation, and the Economy: Research</td>
</tr>
<tr>
<td>ECON 1770</td>
<td>Fixed Income Securities</td>
</tr>
<tr>
<td>ECON 1780</td>
<td>Corporate Strategy</td>
</tr>
<tr>
<td>ECON 1790</td>
<td>Corporate Governance and Management</td>
</tr>
</tbody>
</table>

Select two 1000-level courses from the "mathematical economics" group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization</td>
</tr>
<tr>
<td>ECON 1465</td>
<td>Market Design: Theory and Applications</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Econometrics II</td>
</tr>
<tr>
<td>ECON 1650</td>
<td>Financial Econometrics</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
</tr>
<tr>
<td>ECON 1740</td>
<td>Mathematical Finance</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1759</td>
<td>Data, Statistics, Finance</td>
</tr>
<tr>
<td>ECON 1810</td>
<td>Economics and Psychology</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Behavioral Economics</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
</tbody>
</table>

Select one 1000-level course from the "data methods" group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1301</td>
<td>Economics of Education I</td>
</tr>
<tr>
<td>ECON 1305</td>
<td>Economics of Education: Research</td>
</tr>
<tr>
<td>ECON 1310</td>
<td>Labor Economics</td>
</tr>
<tr>
<td>ECON 1355</td>
<td>Environmental Issues in Development Economics</td>
</tr>
<tr>
<td>ECON 1360</td>
<td>Health Economics</td>
</tr>
<tr>
<td>ECON 1400</td>
<td>The Economics of Mass Media</td>
</tr>
<tr>
<td>ECON 1410</td>
<td>Urban Economics</td>
</tr>
</tbody>
</table>

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 1660   Big Data
ECON 1759   Data, Statistics, Finance
ECON 1765   Finance, Regulation, and the Economy: Research

Total Credits: 16

1. APMA 0330 and APMA 0340 may be substituted with advisor approval.
2. No course may be used to simultaneously satisfy the "financial economics," the "mathematical economics," or the "data methods" requirements.
3. Or ECON 1110 with permission.
4. Note that Econ 1620, 1960, and 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to 1970s may be used for university credit.

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 a 3.5 GPA overall.

To graduate with honors, a student must write an honors thesis in the 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 the approval of a faculty sponsor.

Professional Track

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 related 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.

Computer Science-Economics Concentration Requirements

The joint Computer Science-Economics concentration exposes students to the theoretical and practical connections between computer science and economics. It prepares students for professional careers that incorporate aspects of economics and computer technology and for academic careers.
conducting research in areas that emphasize the overlap between the two fields. Concentrators may choose to pursue either the A.B. or the Sc.B. degree. While the A.B. degree allows students to explore the two disciplines by taking advanced courses in both departments, the smaller number of required courses is compatible with a liberal education. The Sc.B. degree achieves greater depth in both computer science and economics by requiring more courses, and it offers students the opportunity to creatively integrate both disciplines through a design requirement. In addition to courses in economics, computer science, and applied mathematics, all concentrators must fulfill the Computer Science department's writing requirement by passing a course that involves significant expository writing.


Prerequisites (3 courses):

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>or MATH 0540</td>
<td>Honors Linear Algebra</td>
</tr>
<tr>
<td>or CSCI 0530</td>
<td>Coding the Matrix: An Introduction to Linear Algebra for Computer Science</td>
</tr>
</tbody>
</table>

**ECON 0110** Principles of Economics

**Required Courses: 17 courses: 8 Computer Science, 8 Economics, and a Capstone**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1450</td>
<td>Probability and Computing (1)</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
</tbody>
</table>

Select one of the following Series:

**Series A**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160</td>
<td>Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures</td>
</tr>
</tbody>
</table>

**Series B**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0170 &amp; CSCI 0180</td>
<td>Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction</td>
</tr>
</tbody>
</table>

**Series C**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0190</td>
<td>Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level CS course, or a 1000-level course.)</td>
</tr>
</tbody>
</table>

Two of the following intermediate courses, one of which must be math-oriented and one systems-oriented.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0220</td>
<td>Introduction to Discrete Structures and Probability (math)</td>
</tr>
<tr>
<td>CSCI 0320</td>
<td>Introduction to Software Engineering (systems)</td>
</tr>
<tr>
<td>CSCI 0330</td>
<td>Introduction to Computer Systems (systems)</td>
</tr>
<tr>
<td>CSCI 1010</td>
<td>Theory of Computation</td>
</tr>
</tbody>
</table>

A pair of CS courses with a coherent theme. 1

An additional CS course that is either at the 1000-level or is an intermediate course not already used to satisfy concentration requirements. CSCI 1450 may not be used to satisfy this requirement.

**ECON 1130** Intermediate Microeconomics (Mathematical) 2

**ECON 1210** Intermediate Macroeconomics

**ECON 1630** Econometrics I

Three courses from the "mathematical economics" group (CSCI 1951K can be counted as one of them, if it has not been used to satisfy the computer science requirements of the concentration and if the student has taken either ECON 1470 or ECON 1870):

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
</tr>
<tr>
<td>ECON 1220</td>
<td>Monetary and Fiscal Policy</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization</td>
</tr>
<tr>
<td>ECON 1465</td>
<td>Market Design: Theory and Applications</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Econometrics II</td>
</tr>
<tr>
<td>ECON 1650</td>
<td>Financial Econometrics</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
</tr>
<tr>
<td>ECON 1740</td>
<td>Mathematical Finance</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1759</td>
<td>Data, Statistics, Finance</td>
</tr>
<tr>
<td>ECON 1810</td>
<td>Economics and Psychology</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Behavioral Economics</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
</tbody>
</table>

and any graduate Economics course

Two additional 1000-level Economics courses (excluding 1620, 1960, 1970) 3

Capstone Course in either Computer Science or Economics 4

Total Credits 17

1 A list of pre-approved pairs may be found at the approved-pairs web page (http://www.cs.brown.edu/ugrad/concentrations/approvedpairs.html). You are not restricted to pairs on this list, but any pair not on the list must be approved by the Computer Science director of undergraduate studies.

2 Or ECON 1110, with permission.

3 Note that ECON 1620, ECON 1960, and ECON 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.

4 One capstone course (http://cs.brown.edu/degrees/undergrad/concentrations/capstone) in either Computer Science or Economics: a one-semester course, taken in the student’s last undergraduate year, in which the student (or group of students) use a significant portion of their undergraduate education, broadly interpreted, in studying some current topic (preferably at the intersection of computer science and economics) in depth, to produce a culminating artifact such as a paper or software project.

Standard Program for the A.B. degree:

Prerequisites (3 courses):

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
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<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
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<tr>
<td>or MATH 0540</td>
<td>Honors Linear Algebra</td>
</tr>
<tr>
<td>or CSCI 0530</td>
<td>Coding the Matrix: An Introduction to Linear Algebra for Computer Science</td>
</tr>
</tbody>
</table>

**ECON 0110** Principles of Economics

**Required Courses: 13 courses: 7 Computer Science and 6 Economics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1450</td>
<td>Probability and Computing (1)</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
</tbody>
</table>

Total Credits 17
Three courses from the "mathematical-economics" group:
ECON 1630
ECON 1210
ECON 1130
requirements.
Two additional CS courses; at least one must be at the 1000-
level. The other must either be at the 1000-level or be an
math-oriented and one systems-oriented:

Series A
CSCI 0150
& CSCI 0160
Introduction to Object-Oriented
Programming and Computer Science
and Introduction to Algorithms and Data
Structures

Series B
CSCI 0170
& CSCI 0180
Computer Science: An Integrated
Introduction
and Computer Science: An Integrated
Introduction

Series C
CSCI 0190
Accelerated Introduction to Computer
Science (and an additional CS course not
otherwise used to satisfy a concentration
requirement; this course may be CSCI
0180, an intermediate-level course, or a
1000-level course)

Two of the following intermediate courses, one of which must be
math-oriented and one systems-oriented:
CSCI 0220
Introduction to Discrete Structures and
Probability (math)
CSCI 0320
Introduction to Software Engineering
(systems)
CSCI 0330
Introduction to Computer Systems
(systems)
CSCI 1010
Theory of Computation

Two additional CS courses; at least one must be at the 1000-
level. The other must either be at the 1000-level or be an
intermediate course not already used to satisfy concentration
requirements.
ECON 1130
Intermediate Microeconomics
(1)
ECON 1210
Intermediate Macroeconomics
(1)
ECON 1630
Econometrics I
(1)

Three courses from the "mathematical-economics" group:

ECON 1170
Welfare Economics and Social Choice
Theory
ECON 1220
Monetary and Fiscal Policy
ECON 1225
Advanced Macroeconomics: Monetary,
Fiscal, and Stabilization Policies
ECON 1460
Industrial Organization
ECON 1465
Market Design: Theory and Applications
ECON 1470
Bargaining Theory and Applications
ECON 1490
Designing Internet Marketplaces
ECON 1640
Econometrics II
ECON 1650
Financial Econometrics
ECON 1660
Big Data
ECON 1670
Advanced Topics in Econometrics
ECON 1740
Mathematical Finance
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
or any graduate Economics course

Total Credits 13

Mathematics-Economics Concentration
Requirements
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
(1)
ECON 1210
Intermediate Macroeconomics
(1)
ECON 1630
Econometrics I
(1)

Two courses 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 1640  Econometrics II
ECON 1650  Financial Econometrics
ECON 1660  Big Data
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.  
1. ECON 1301  Economics of Education I
2. ECON 1305  Economics of Education: Research
3. ECON 1310  Labor Economics
4. ECON 1360  Health Economics
5. ECON 1410  Urban Economics
6. ECON 1480  Public Economics
7. ECON 1510  Economic Development
8. ECON 1520  The Economic Analysis of Institutions
9. ECON 1530  Health, Hunger and the Household in Developing Countries
10. ECON 1629  Applied Research Methods for Economists
11. ECON 1640  Econometrics II
12. ECON 1650  Financial Econometrics
13. ECON 1759  Data, Statistics, Finance
14. ECON 1765  Finance, Regulation, and the Economy: Research

Two additional 1000-level economics courses

Mathematics

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

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

1. Or ECON 1110 with permission.
2. No course may be "double-counted" to satisfy both the mathematical-economics and data methods requirements.

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

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.

Behavioral Decision Sciences

Concentration Requirements

Beginning spring 2018, students may pursue an A.B. in Behavioral Decision Sciences. The study of decision making covers descriptive questions like how people, institutions, and nations make judgments and decisions; normative questions about rationality, such as what constitutes the best judgments and decisions; and prescriptive questions, such as how the process of decision making can be improved to make actual decisions closer to optimal ones. By virtue of its broad interdisciplinary nature, the study of decision making covers work found in a variety of more traditional disciplines including psychology, cognitive science, economics, philosophy, computer science, and neuroscience. Professor Steven Sloman (steven_sloman@brown.edu?subject=Behavioral Decision Sciences) is the concentration advisor. Upon declaring, concentrators are also encouraged to speak with the appropriate area specialist (listed here [http://www.brown.edu/Departments/CLPS/undergrad/behavioral-decision-sciences]).

Standard Program for the AB Degree

CLPS Classes:
CLPS 0220  Making Decisions
Choose one of the following:
CLPS 0400  Cognitive Neuroscience
CLPS 0200  Human Cognition
CLPS 0700  Social Psychology
Choose two of the following:
CLPS 1470  Mechanisms of Motivated Decision Making
CLPS 1495  Affective Neuroscience
CLPS 1730  Psychology in Business and Economics
CLPS 1760  The Moral Brain

Distribution Requirements:
Select one Introductory Course from the following:
1. ECON 0110  Principles of Economics
2. CSCI 0040  Introduction to Scientific Computing and Problem Solving
3. or CSCI 0150  Introduction to Object-Oriented Programming and Computer Science
Economics

or CSCI 0170  Computer Science: An Integrated Introduction
or CSCI 0180  Computer Science: An Integrated Introduction
or CSCI 0190  Accelerated Introduction to Computer Science

Select Two Advanced Courses From:

CSCI 1410  Artificial Intelligence
CSCI 1420  Machine Learning
ECON 1110  Intermediate Microeconomics
or ECON 1130  Intermediate Microeconomics (Mathematical)
ECON 1660  Big Data
ECON 1820  Behavioral Economics
ECON 1870  Game Theory and Applications to Economics
PHIL 0580  Philosophy of Economics
PHIL 1550  Decision Theory: Foundations and Applications

Methods Classes:

Choose One From the Following:

APMA 0650  Essential Statistics
APMA 1650  Statistical Inference I
CLPS 0900  Statistical Methods
CSCI 0100  Data Fluency for All
CSCI 1450  Probability and Computing
ECON 1620  Introduction to Econometrics

Plus One of the Following:

CLPS 1791  Laboratory in Social Cognition
CSCI 0150  Introduction to Object-Oriented Programming and Computer Science
CSCI 0170  Computer Science: An Integrated Introduction
ECON 1629  Applied Research Methods for Economists
ECON 1630  Econometrics I
PHIL 0540  Logic

Economics:

ECON 1820  Behavioral Economics
ECON 1870  Game Theory and Applications to Economics

Applied Mathematics:

APMA 0200  Introduction to Modelling
APMA 1690  Computational Probability and Statistics
APMA 2640  Theory of Probability
APMA 2821V  Neural Dynamics: Theory and Modeling

Philosophy:

PHIL 0500  Moral Philosophy
PHIL 1650  Moral Theories
PHIL 1750  Epistemology

Computer Science:

CSCI 1430  Computer Vision
CSCI 1460  Computational Linguistics

CSCI 1951A  Data Science

Political Science:

POLS 1090  Polarized Politics
POLS 1150  Prosperity: The Ethics and Economics of Wealth Creation
POLS 1470  International Negotiation and Conflict Resolution

Public Health:

PHP 1740  Principles of Health Behavior and Health Promotion Interventions

Capstone:

Fall seminar in which students write an integrative paper or do a project covering their areas of study in their senior year.

Total Credits 13

1 Students may not use the same course to satisfy both the Introductory and Methods course requirements.

Students will be expected to take no more than 6 courses below the 1000-level within the concentration. Students with multiple concentrations may not apply more than 2 courses from a second concentration to the AB in Behavioral Decision Sciences. No more than 2 courses can be transferred from another institution to count toward concentration credit.

Honors

Students interested in honors should identify a faculty honor's sponsor and sign up with the concentration advisor during Semester 6. Although there is no minimum grade point average to enter the program, admission to the program is limited to students who have accumulated a strong academic record, and show evidence that they will meet the program's requirements. It is expected that honors candidates will conduct a year-long research project under the direction of a faculty sponsor culminating in a written thesis at the end of Semester 8. Honors theses can serve to satisfy the capstone requirement, although honors students are expected to attend the capstone seminar in the fall of their senior year.

Economics Graduate Program

The department of Economics offers a graduate program leading to the Doctor of Philosophy (Ph.D.) degree. Ph.D. students can earn the A.M. on the way to the Ph.D. or can receive the A.M. if they choose not to complete the Ph.D. program. The A.M. requires passing eight courses in the areas of Microeconomics, Macroeconomics, and Econometrics.

For more information on admission and program requirements, please visit the following website:

http://www.brown.edu/academics/gradschool/programs/economics
Courses

ECON 0110. Principles of Economics.
Extensive coverage of economic issues, institutions, and terminology, plus an introduction to economic analysis and its application to current social problems. Required for all economics concentrators. Prerequisite for ECON 1110, 1130, 1210 and 1620. Serves as a general course for students who will take no other economics courses and want a broad introduction to the discipline. Weekly one-hour conference required (conferences are not held during the summer session).

ECON 0170. Essential Mathematics for Economics.
This course teaches the mathematical skills useful for upper level Economics classes. Emphasis is on acquisition of tools, problem solving, intuition, and applications rather than proofs.

This course satisfies the mathematics requirement for the Economics concentration, but does not serve as a prerequisite for upper level courses in Math, Applied Math, or other departments. Students planning further courses in those areas should take MATH 0100 or MATH 0170 (which also satisfy the Economics concentration requirement) instead. Ideally, ECON 0170 should be taken before ECON 1110, or at least simultaneously.

ECON 0180A. Economics on a Broad Canvas.
Where economics fits into the broader pattern of the social sciences, history, and philosophy. Topics include: the world economy from pre-history to the present; the history and varieties of economic thought; comparative economic systems; challenges facing less developed countries; positive and normative perspectives on income inequality and redistribution; and the economy and the quality of life, including the environment. Enrollment limited to 20 first year students.

Introduction to the economic aspects of the major welfare programs provided by government in American Society; Social Security, Health Care and Insurance, Education, Environmental Control. The focus of the course will be on the benefits and costs of each program and proposals for altering the scope of the public sector. Enrollment limited to 19 first year students. FYS

ECON 0180C. Punishment and Inequality in America.
This seminar will use social theory and social science evidence to understand how punishment works as a mechanism to produce inequality in American society. The institution of incarceration as a generator of social stigma is examined in this light. Zero-tolerance policing practices and racial profiling are discussed from this point of view as well. Questions about authority, legitimacy, deviancy, power and social cognition will guide the discussion. Enrollment limited to 19 first year students. FYS WRIT

We will explore the ethical and economic foundation of Human Rights and its relationship to the Cosmopolitanism View. In particular, we will explore the question of whether people should have not just human rights to liberty, life and security, but also to a basic level of economic subsistence. Understanding these limits is key to using – but not mis-using – the power of data.

This first-year seminar will focus on understanding where data comes from, what we can learn from it, and what the limitations are. The course will emphasize policy-relevant economic and public health applications.

ECON 0300. Health Disparities.
This seminar will examine the causes and consequences of racial and ethnic disparities in health in the United States, and their relationship to economic disparities. Although the course will be taught primarily from an economics perspective, it will draw on literature from sociology, demography and epidemiology. Enrollment determined by lottery. Prior completion of ECON 0110 or a higher-level economics course is required. SOPH

ECON 0310. Income, Wealth, and Health Inequality in the United States.
The course begins with issues of measurement and definition. We then turn to examine the economic underpinnings of inequality, including the relationship between education, skill, and income; the intergenerational transmission of wealth and economic status; and the causal relationship between health and income. The third part of the course looks at the driving forces behind the large rise in inequality that has occurred since roughly 1980 as well as differential trends in life expectancy and health behaviors among income groups over this period. The last section examines government policies that impact inequality and the political economy of redistribution.

Spr ECON0390 S01 16946 TTh 10:30-11:50(13) (D. Weil)
A course designed primarily for students who do not plan to concentrate in economics but who seek a basic understanding of the economics of less developed countries, including savings and investment, health and education, agriculture and employment, and interactions with the world economy, including trade, international capital flows, aid, and migration. Prerequisite: ECON 0110 or advanced placement. Enrollment limited to 100. WRIT
Fall ECON0510 S01 18643 TTh 9:00-10:20(02) (R. Steinberg)

ECON 0520. The Economics of Gender Equality and Development.
This course shows how an economics lens can be useful in understanding disparities in gender outcomes; how these disparities evolve over the development process; why closing gender gaps matters for development; and the roles of public policies and private action. Among the outcomes examined are human capital, access to economic opportunities, and agency or the ability to make choices and take actions. We will use the tools of economics think about how individuals and families make decisions, respond to opportunities generated by markets, and are affected by the parameters outlined by both formal and informal institutions and social norms.
Basic accounting theory and practice. Accounting procedures for various forms of business organizations.
Fall ECON0710 S01 16615 MW 6:00-7:30 (R. D’Andrea)
Fall ECON0710 S02 16616 MW 6:00-7:30 (T. Lonardo)
Spr ECON0710 S01 25337 MW 6:00-7:30 (F. Sciolto)
Spr ECON0710 S02 25338 TTh 6:00-7:30 (T. Lonardo)

ECON 0760. Political Theory and Economic Analysis.
We will examine what role economic theory plays and/or ought to play in political theory and on our conception of politics more broadly. Topics include particular political philosophies and economic concepts such as rationality and efficiency. Prerequisite: ECON 0110 or advanced placement.
This is a seminar that focuses on issues of ethics that arise in the context of business and economics. Learning occurs primarily through guided student discussions in class. Other economics courses, especially ECON 0110, 1110, 1340 and 1790 are highly recommended.

ECON 1110. Intermediate Microeconomics.
Tools for use in microeconomic analysis, with some public policy applications. Theory of consumer demand, theories of the firm, market behavior, welfare economics, and general equilibrium. Prerequisite: MATH 0060, 0070, 0090, 0100, 0170, 0180, 0190, 0200, or 0350; and ECON 0110; or advanced placement.
Fall ECON1110 S01 16618 MWF 10:00-10:50(14) ‘To Be Arranged’
Fall ECON1110 S02 16621 MWF 12:00-12:50(12) ‘To Be Arranged’
Fall ECON1110 S03 16622 MWF 2:00-2:50(07) ‘To Be Arranged’
Spr ECON1110 S01 25339 MWF 9:00-9:50(02) ‘To Be Arranged’
Spr ECON1110 S02 25340 MWF 12:00-12:50(05) ‘To Be Arranged’
Spr ECON1110 S03 25341 MWF 1:00-1:50(06) ‘To Be Arranged’

ECON 1130. Intermediate Microeconomics (Mathematical).
Microeconomic theory: theories of the consumer and firm, competitive equilibrium, factor markets, imperfect competition, game theory, welfare economics, general equilibrium. May not be taken in addition to ECON 1110. Prerequisite: MATH 0100, 0170, 0180, 0190, 0200, or 0350; and ECON 0110; or advanced placement.
Fall ECON1130 S01 16623 MWF 12:00-12:50(12) (A. Poterack)
Spr ECON1130 S01 25387 TTh 10:30-11:50(09) (R. Serrano)

ECON 1160. Managerial Economics.

ECON 1168. The Welfare State.
The course will include analyses of Health Care, Social Security, Medicare, Medicaid, Immigration Control, and Environmental Control. The focus will be on the extent to which the programs meet their goals without straining the federal budget. Both existing and alternative programs will be evaluated in terms of costs, benefits, as well as their present and future demands on tax revenue and user fees. Prerequisite: ECON 1110 or 1130; and APMA 1650 or ECON 1620. Enrollment limited to 30 senior concentrators in Economics, Mathematical Economics, Applied Math-Economics, Computer Science Economics, and BEO.

ECON 1210. Intermediate Macroeconomics.
The economy as a whole: Level and growth of national income, inflation, unemployment, role of government policy. Prerequisite: MATH 0060, 0070, 0090, 0100, 0170, 0180, 0190, 0200, or 0350; and ECON 0110; or advanced placement.
Fall ECON1210 S01 16627 TTh 9:00-10:20(02) (M. Lancaster)
Fall ECON1210 S02 16628 MWF 1:00-1:50(06) (P. Michailati)
Fall ECON1210 S03 16629 MWF 2:00-2:50(07) (P. Michailati)
Spr ECON1210 S01 25427 TTh 9:00-10:20(01) ‘To Be Arranged’
Spr ECON1210 S02 25428 TTh 2:30-3:50(11) ‘To Be Arranged’
Spr ECON1210 S03 25429 MWF 2:00-2:50(07) ‘To Be Arranged’

ECON 1220. Monetary and Fiscal Policy.
This course is about macroeconomic policy with special focus on the recent economic crisis. Questions will be addressed such as: How does monetary policy affect the economy? What is the effect of government spending and tax cuts? What should the government do in the event of a financial crisis? The main objective of this course is to introduce students to the type of models and methods used in current research in macroeconomics both in the scholarly literature but also in the practice of central banks and major policy institutions.

The course is concerned with macroeconomic policy in the US, with special focus on the recent economic crisis. The main objective of the course is to introduce students to the type of models and methods used in current research in macroeconomics both in the scholarly literature but also in the practice of central banks and major policy institutions. Events of the financial crisis and the economic recession of 2007-2009 will serve to illustrate the challenges confronted by macroeconomic analysis. Prerequisites: ECON 1110 or 1130; and MATH 0090, 0100, 0170, 0180, 0190, 0200, or 0350; or advanced placement. Enrollment limited to 30.
Spr ECON1225 S01 25430 TTh 2:30-3:50(11) (G. Eggertsson)
ECON 1300. Education, the Economy and School Reform (EDUC1150).
Interested students must register for EDUC 1150.

ECON 1301. Economics of Education I.
This course teaches students how to use microeconomics to analyze a broad array of education policy issues. The departure of this course from ECON 1110 is the emphasis on studying microeconomics in applied settings, and in particular, using microeconomic concepts to think about, analyze, and solve policy questions in education. Prerequisite: ECON 1110 or 1130.

ECON 1305. Economics of Education: Research.
This course will cover academic research in the Economics of Education. Topics include production of student achievement; measuring achievement, funding of public education, and school choice and school vouchers. Prerequisites: ECON 1110 or 1130; and APMA 1650 or CSCI 1450 or ECON 1620 or 1630. Enrollment limited to 25 juniors, seniors, and graduate students. WRIT DPLL

ECON 1310. Labor Economics.
Labor supply, human capital, income inequality, discrimination, immigration, unemployment. Prerequisite: ECON 1110 or 1130; and APMA 1650 or CSCI 1450 or ECON 1620 or 1630. Enrollment limited to 100. DPLL

The goal of the course is to help students to use economic theory and modern empirical methodology to think critically about the relative costs and benefits of health and education policies. By the end of the course students should feel comfortable critically evaluating proposals meant to increase human capital through school reforms, increased access to health care, or improved health environments.

ECON 1340. Economics of Global Warming.
The problem of global warming can be usefully be described with the following simple economic model. We face a tradeoff between current consumption, future consumption, and future climate. Having preferences over consumption and future climate and would like to choose our optimal climate/consumption bundle. This course is organized around filling in the details required to make this model useful, characterizing the optimal climate/consumption path suggested by the model, and finally, investigating policies to achieve the optimal path.

This course aims to teach students to use economic and empirical tools to analyze environmental issues from the perspective of economics. First, we review when and why the markets fail, competing policy solutions (e.g., cap-and-trade), and cost-benefit analysis. Second, we survey methods to quantify the benefits of environmental regulations, including revealed and stated preference methods, a primer on climate-economy modeling, and a real-world application in a class research project. Third, we study the costs of environmental regulations. We conclude with advanced policy considerations (e.g., trans-boundary pollutants), private market solutions/corporate social responsibility, and select special topics (e.g., resources and economic development).

ECON 1355. Environmental Issues in Development Economics.
Examines environmental issues in developing countries, including air and water pollution, land use change, energy use, and the extraction of natural resources. Uses microeconomic models of households and firms, linking household/firm decision-making on environmental issues to choices in labor, land, and product markets. Develops basic empirical techniques through exercises and a project. For readings, relies exclusively on recent research to illustrate the roles of econometrics and economic theory in confronting problems at the nexus of the environment, poverty, and economic development. WRIT

ECON 1360. Health Economics.
This course introduces students to the issues, theory and practice of health economics in the US. Topics include the economic determinants of health, the market for medical care, the market for health insurance and the role of the government in health care. Course work includes data analyses using the program STATA. Prerequisites: ECON 1110 or 1130; and ECON 1620, 1629, 1630, or APMA 1650 or CSCI 1450 or other statistics background. Enrollment limited to 24.

ECON 1370. Race and Inequality in the United States.
We examine racial inequality in the United States, focusing on economic, political, social and historical aspects. Topics include urban poverty, employment discrimination, crime and the criminal justice system, affirmative action, immigration, and low wage labor markets. Black/white relations in the US are the principle but not exclusive concern. Prerequisite: ECON 1110 or 1130. Enrollment limited to 25. DPLL

ECON 1375. Inequality of Opportunity in the US.
This course examines empirical evidence on inequality of opportunity in the US. We cover recent work in economics that measures the importance of parents, schools, health care, neighborhoods, income, and race in determining children's long-term labor market success, and implications of these findings for US public policy. We will also place the empirical work in historical and philosophical context and cover a variety of statistical issues. Prerequisites: ECON 1110 or 1130; and ECON 1620, 1629, or 1630. Enrollment limited to 30 seniors.

This course provides an introduction to the important role played by legal rules for functioning of a market economy, and affecting economic activities. The tools and technique from economics will be used to make prediction about behaviour of individuals under various legal rules. The focus of the course is on the economic analysis of the contract law, the law of torts including accident and product liability laws, the property law including the intellectual property rights and the eminent domain, the litigation and the criminal law. Prerequisite: ECON 1110 or 1130. Enrollment limited to 100.

ECON 1390. Research Methods for Economists.
This course is designed to prepare students to undertake empirical research in economics. Students thinking of writing an honors thesis or conducting independent research are especially urged to take it during their junior year. We will answer such questions as where does an empirical research paper look like? How do we formulate a hypothesis to test? How can we use data to test our hypothesis? Students will read and discuss papers published in professional journals and perform data analysis as part of the course requirements. Prerequisites: ECON 1110 or 1130; and APMA 1650 or CSCI 1450 or ECON 1620 or 1630.

ECON 1400. The Economics of Mass Media.
The mass media shape our culture and politics but are also shaped by their economic incentives. In this course we will use tools from microeconomics and econometrics to study the effects of mass media on economic, social and political behavior, and to study the factors that shape media content and availability. We will develop implications for business and public policy. Students will complete weekly readings, bi-weekly assignments, a take-home midterm, and a final paper and presentation. Class time will be devoted to a mix of lecture and discussion of readings and lecture topics. WRIT

ECON 1410. Urban Economics.
The first part of the course covers the set of conceptual and mathematical models widely used to understand economic activity both between and within cities. The second part of the course examines various urban policy issues including urban transportation, housing, urban poverty, segregation and crime. The course makes extensive use of empirical evidence taken primarily from the United States. Prerequisites: ECON 1110 or 1130; and APMA 1650 or CSCI 1450 or ECON 1620 or 1630. Enrollment limited to 100.

APMA 1650 or CSCI 1450 or ECON 1620 or 1630. Enrollment limited to 24. DPLL
ECON 1420. Urbanization in China.
Examines urbanization processes and urban public policy in China.
Also draws on historical and recent experience in the U.S. Policy areas
including policies affecting urbanization, migration, and industrial location;
policies affecting housing, land use, and urban reform; and policies
affecting fiscal decentralization and infrastructure investments such as
transportation. Prerequisites: ECON 1110 or ECON 1130. Open to juniors
and seniors. DPLL

An introduction to the economic approach to demography. Applies the
theoretical and empirical frameworks of economics to topics such as
fertility, migration (both domestic and international), investments in health
and human capital, life-cycle labor supply, intergenerational transmission
of economic status, the distribution of income and wealth, and the
interaction of population growth with the standard of living. Prerequisite:
ECON 1110 or 1130.

ECON 1440. Economic Theories of Firms.
Examines theories of why firms exist, their internal organizations and
employment relations, ownership and control, efficiency versus conflict
approaches, and alternative organizational forms (e.g., employee
ownership). Prerequisite: ECON 1110 or 1130. Enrollment limited to 100.

Positive and normative study of the organizations that comprise and the
institutional structures that characterize a modern mixed market economy.
Theoretical efficiency and potential limitations of private enterprises
and markets including (a) why some market actors are organizations
(e.g., companies), (b) effort elicitation problems in organizations, (c) the
problem of cooperation in traditional versus behavioral economics, and (d)
alternative kinds of organization (including proprietorships, corporations,
nonprofits, government agencies). Roles of government, and problems of
government failure, including the collective action problem of democracy.
State-market balance and contemporary controversies over the economic
system in light of the 2008 financial crisis. Enrollment limited to 100 juniors
and seniors. Prerequisite: ECON 1110 or 1130.

ECON 1460. Industrial Organization.
A study of industry structure and firm conduct and its economic/antitrust
implications. Theoretical and empirical examinations of strategic firm
interactions in oligopolistic markets, dominant firm behaviors, and entry
deterrence by incumbents. Also economics of innovation: research and
development activities and government patent policies. Prerequisite:
ECON 1110 or 1130. Some knowledge of calculus required. Enrollment
limited to 100.
Spr ECON1460 S01 25435 MWF 11:00-11:50(04) "To Be Arranged"

This course studies the design of organized markets, focusing on efficient
organization and the incentives created by market rules. The analysis
relies on a mix of documenting the rules of real-world markets, game
theoretic analysis, empirical analysis, and experimental work. Applications
include: online auction markets (e.g., eBay, Amazon); ad auctions (e.g.,
Google); matching markets, including matching students to schools,
matching workers to jobs (e.g., medical residents to hospitals, lawyers
to clerkship positions), matching kidney donors to recipients, and online
dating. Prerequisites: ECON 1110 or 1130; and MATH 0060, 0070, 0090,
0100, 0170, 0180, 0190, 0200, 0350, or advanced placement.

Bargaining theory is emerging as an important area within the general
rubric of game theory. Emphasis is on providing a relatively elementary
version of the theory in order to make it accessible to a large number of
students. Covers introductory concepts in game theory, strategic and
axiomatic theories of bargaining and their connections, applications to
competitive markets, strikes, etc. Prerequisite: ECON 1110 or 1130.
Enrollment limited to 100.

ECON 1480. Public Economics.
This course is an introduction to the economics of the public sector. We
will cover theoretical and empirical tools of public economics and apply
these tools to a wide range of issues including externalities, public goods,
collective choice, social insurance, redistribution and taxation. The course
will focus on questions such as: What should government do? How much
should governments insure individuals against misfortune? How much
should governments redistribute resources from high-income to low-
income households? Throughout the course we will emphasize real-world
empirical applications rather than hypothetical examples. DPLL

The course looks at the economics of social security reform with particular
focus on possible policy responses to the increasing fraction of the
population that is elderly in OECD countries. Among the topics that
will be considered are pay as you go funding, defined benefits versus
defined concentrations, privatization, labor market effects of pensions,
retirement decisions, labor supply by couples, and macroeconomic effects.
Prerequisite: ECON 1110 or 1130. Enrollment limited to 30. Not open to
first-year students. DPLL

ECON 1486. The Economic Analysis of Political Behavior.
Slow economic growth, controversial policy, and over a decade of
continuous war have led many to question the extent to which government
is a force for the common good. Blame is often assigned to specific
politicians or ideological perspectives. Public choice economics instead
analyzes the incentive structure within which political decisions take place,
seeking to uncover the forces guiding the behavior of voters, legislators,
judges, and other political agents. This course will examine the insights
and limitations of the public choice perspective in the context of electoral
politics, legislation, bureaucracy and regulation, and constitutional rules.
WRIT

ECON 1490. Designing Internet Marketplaces.
How has the digital economy changed market interactions? The goal of
this course is to help you think critically, using economic theory, about the
future of the digital economy.
What are important economic activities now being conducted digitally?
How has digital implementation of these activities changed economists'
classical views and assumptions?
What are ways in which we can use economics to engineer “better” digital
markets?
We will focus on several real-world markets (e.g. eBay, Airbnb, Google
advertising, Uber, Tinder, TaskRabbit) and topics (e.g. market entry,
pricing, search, auctions, matching, reputation, peer-to-peer platform
design).
Fall ECON1490 S01 16952 TTh 10:30-11:50(13) (B. Pakzad-Hurson)

ECON 1500. Current Global Macroeconomic Challenges.
Analysis of current economic challenges in the U.S., Europe, Japan,
and China. Topics include fiscal and monetary policies, international
trade, capital flows and exchange rate policy, and policies for long-run
growth. Emphasis on macroeconomic policies in the individual nations
and their interaction with each other. Prerequisites: ECON 1210. Also
recommended: ECON 1550 and 1850. Enrollment limited to 100.

ECON 1510. Economic Development.
This course is an introduction to development economics and related
policy questions. It discusses the measurement of poverty and inequality;
growth; population change; health and education; resource allocation
and gender; land and agriculture; and credit, insurance, and savings.
The course provides a theoretical framework for the economic analysis of
specific problems associated with developing economies, and introduces
empirical methods used to evaluate policies aimed at solving these
problems. By the end of the class, students will be able to discuss some of
the “hot topics” in development, like microfinance, family planning, or the
problem of “missing women” in South-East Asia. DPLL
ECON 1520. The Economic Analysis of Institutions
This course deals with the economic analysis of institutions, with a focus on developing countries. The first section covers institutions in traditional agrarian societies. Topics include consumption smoothing and the organization of land, labor and credit markets. The second section focuses on the role of the community in facilitating economic activity. Institutions include cooperatives, networks, marriage and the family. Prerequisites: ECON 1110 or 1130; and APMA 1650 or ECON 1620 or 1630; or equivalent. Enrollment limited to 100.

ECON 1525. Privatization of State Owned Enterprises
After world war II, many western economies (foremost the U.K and France) nationalized major industries, including the infrastructure sector (e.g., Electricity, Telecommunication and Rail). Thirty years later, due to miserable performance, an adverse trend started to shift ownership of state owned enterprises (SOE) to private ownership.

We shall discuss the following major topics:
The Record on Performance and Reform of State-Owned Enterprises
The Rationale for and problems of Public Ownership
Privatization of /natural Monopolies: Theory and Evidence Regulation:
Structure and Methods
Deregulation and Competition Policy
Labor and Privatization
Methods of Privatization: Auctions, Share Flotations, Concessions and Strategic Investors

ECON 1530. Health, Hunger and the Household in Developing Countries
Microeconomic analysis of household behavior in low income societies emphasizing the economic determinants of health and nutrition and the evaluation of policy. The relationship among health, nutrition, fertility, savings, schooling, labor productivity, wage determination, and gender-based inequality. Emphasizes theoretically-based empirical research. Enrollment limited to 30. WRIT DPLL

Fall ECON1530 S01 16785 W 3:00-5:30(17) (A. Foster)

ECON 1540. International Trade
Theory of comparative advantage, trade, and income distribution. Welfare analysis of trade: gains from trade, evaluation of the effects of trade policy instruments-tariffs, quotas, and subsidies. Trade under imperfect competition. Strategic trade policy. Trade, labor markets, preferential trade agreements, and the world trading systems. Prerequisite: ECON 1110 or 1130. Enrollment limited to 100.

Fall ECON1540 S01 16638 TTh 9:00-10:20(01) (O. Galar)

ECON 1550. International Finance
The balance of payments; identification and measurement of surpluses and deficits; international monetary standards; the role of gold and paper money; government policies; free versus fixed exchange rates; international capital movements; war and inflation; the International Monetary Fund. Prerequisite: ECON 1210. Enrollment limited to 100.

Spr ECON1550 S01 25439 MWF 9:00-9:50(02) 'To Be Arranged'

ECON 1560. Economic Growth
A theoretical and empirical examination of economic growth and income differences among countries. Focuses on both the historical experience of countries that are currently rich and the process of catch-up among poor countries. Topics include population growth, accumulation of physical and human capital, technological change, natural resources, income distribution, geography, government, and culture. Prerequisite: ECON 1110 or 1130; and MATH 0060, 0070, 0090, 0100, 0170, 0180, 0190, 0200 or 0350; or advanced placement. Enrollment limited to 100.

Spr ECON1560 S01 25440 MWF 11:00-11:50(04) (D. Weil)

ECON 1565. Income Inequality
This course examines the macroeconomic dimensions of income inequality. How much of national income is paid to capital and how much to labor? What determines the gap in wages between workers with different skill levels, as well as variation in wages within skill groups? How have changes in technology, openness to trade, government policy, and the quantities of factors of production contributed to changes in these relative returns? What determines the aggregate quantities of different factors of production as well as their distribution among individuals? How does inequality feed back to affect macroeconomic stability and long term growth?

ECON 1570. The Economics of Latin Americans
This course introduces students to the economic study of Latin Americans (both in the US and abroad). Topics include the determinants of economic development, institutions and growth, imperialism, conflict, immigration and discrimination.

Fall ECON1570 S01 16947 TTh 9:00-10:20(02) (P. Dal Bo)

ECON 1580. Comparative Economic Systems
Recent histories, institutional structures, and performance of industrialized economies of the U.S., Europe and Asia. The Marxist critique of capitalism; the theory of centrally planned economies; the Soviet economy; and problems of reform and transition. Workers' self-management as an alternative industrial order. Prerequisite: EC 111 or 113.

ECON 1590. The Economy of China since 1949
This course examines the organization, structure, and performance of the economy of mainland China, with a focus on urban and regional development. The course analyzes the changing economic system including the roles of planning and markets and government economic strategy and policies. The pre-reform period (1949-78) receives attention in its own right, but especially as it influences developments in the market-oriented reform period since 1978. Topics covered include rural and urban development, industrialization and FDI, housing and land markets, rural-urban migration, income inequality and growth, and the evolving spatial structure of cities. Both analytical and descriptive methods are used. Prerequisite: ECON 1110 or 1130. ECON 1210 and 1410 are helpful but not required. Enrollment limited to 100. DPLL

Fall ECON1590 S01 16789 TTh 2:30-3:50(03) (L. Putterman)

ECON 1600. Economics of the Middle East
A survey of the economies of the Middle East. Examines various aspects of the economic realities of the region, including economic and human development, water and food security, the economics and politics of oil, population growth and labor mobility, education, the role of the state, economic reform, the political economy of conflict and peace, and the prospects for regional integration. Prerequisite: ECON 1110 or 1130. Enrollment limited to 100.

ECON 1620. Introduction to Econometrics
Probability and statistical inference. Estimation and hypothesis testing. Simple and multiple regression analysis. Applications emphasized. Prerequisite: ECON 0110 or advanced placement, or ECON 1110 or ECON 1130, and MATH 0090. Weekly one-hour computer conference required.

Fall ECON1620 S01 16638 MWF 11:00-11:50(16) 'To Be Arranged'

Fall ECON1620 L01 16640 T 12:00-12:50 'To Be Arranged'

Fall ECON1620 L02 16641 Th 12:00-12:50 'To Be Arranged'

Fall ECON1620 L03 16642 M 12:00-12:50 'To Be Arranged'

Fall ECON1620 L04 16643 W 6:00-6:50 'To Be Arranged'

Fall ECON1620 L05 16644 M 6:00-6:50 'To Be Arranged'

Fall ECON1620 L06 16645 F 3:00-3:50 'To Be Arranged'

Spr ECON1620 S01 25441 TTh 10:30-11:50(09) (B. Knight)

Spr ECON1620 L01 25442 T 12:00-12:50 (B. Knight)

Spr ECON1620 L02 25443 Th 12:00-12:50 (B. Knight)

Spr ECON1620 L03 25444 M 12:00-12:50 (B. Knight)

Spr ECON1620 L04 25445 W 6:00-6:50 (B. Knight)

Spr ECON1620 L05 25446 M 6:00-6:50 (B. Knight)

Spr ECON1620 L06 25447 F 3:00-3:50 (B. Knight)
This class will cover the basics of applied research in economics. We will
cover how we use economic theory to formulate a hypothesis to test
and how we use data to test our hypothesis. As part of the coursework,
students will be exposed to topics across multiple fields of applied
economic research (eg, health, labor, political economy, urban economics,
development, etc) that can be explored in greater detail in more advanced
classes. Students will read and discuss papers published in professional
journals and perform data analysis. Prerequisites: ECON 1110 or 1130;
and (ECON 1620 or 1630 or APMA 1650 or APMA 1655).
Fall ECON1620 S01 16646 MWF 10:00-10:50(14) (O. Katz)
Fall ECON1620 L01 16647 M 7:00-7:50 (O. Katz)
Fall ECON1620 L02 16648 M 5:00-5:50 (O. Katz)
Fall ECON1620 L03 16649 T 7:00-7:50 (O. Katz)
Fall ECON1620 L04 16650 W 7:00-7:50 (O. Katz)
Spr ECON1620 S01 25450 MWF 2:00-2:50(07) (O. Katz)
Spr ECON1620 L01 25451 M 7:00-7:50 (O. Katz)
Spr ECON1620 L02 25452 M 5:00-5:50 (O. Katz)
Spr ECON1620 L03 25453 T 7:00-7:50 (O. Katz)
Spr ECON1620 L04 25454 W 7:00-7:50 (O. Katz)
Spr ECON1620 L05 25455 F 12:00-12:50 (O. Katz)

ECON 1630. Econometrics I.
Advanced introduction to econometrics with applications in finance and
economics. How to formulate and test economic questions of interest.
The multivariate linear regression model is treated in detail, including
tests of the model's underlying assumptions. Other topics include:
asymptotic analysis, instrumental variable estimation, and likelihood
analysis. Convergence concepts and matrix algebra are used extensively.
Prerequisites: ECON 0110 or advanced placement; and ECON 1110 or
1130; and APMA 1650 or CSCI 1450; MATH 1620, or ECON 1620; or
equivalent.
Fall ECON1630 S01 16651 TTh 1:00-2:20(10) (S. Schennach)
Spr ECON1630 S01 25448 TTh 1:00-2:20(08) (A. Norets)

ECON 1640. Econometrics II.
Continuation of ECON 1630 with an emphasis on econometric modeling
and applications. Includes applied topics from labor, finance, and
macroeconomics. Prerequisite: ECON 1630. Enrollment limited to 100.
Spr ECON1640 S01 25449 MWF 1:00-1:50(06) (A. McCloskey)

Financial time series, for example, asset returns, options and interest
rates, possess a number of stylized features that are analyzed using a
specific set of econometric models. This course deals with an introduction
to such models. It discusses time series models for analyzing asset
returns and interest rates. (GARCH) models to explain volatility, models to
explain extreme events which are used for the Value at Risk and models
for options prices. Prerequisite: ECON 1630 or instructor permission.
Enrollment limited to 100.
Spr ECON1650 S01 25440 MWF 1:00-1:50(06) (A. McCloskey)

ECON 1660. Big Data.
The spread of information technology has lead to the generation of
vast amounts of data on human behavior. This course explores ways
to use this data to better understand the societies in which we live. The
course weaves together methods from machine learning (OLS, LASSO,
trees) and economics (reduced form causal inference, economic theory,
structural modeling) to answer real world questions in a sequence of
projects. We will use these projects as a backdrop to weigh the importance
of causality, precision, and computational efficiency. Knowledge of basic
econometrics and programming is assumed.
Spr ECON1660 S01 25456 T 4:00-6:30(16) (D. Bjorkegren)

ECON 1670. Advanced Topics in Econometrics.
This class will present advanced topics in Econometrics. The focus will
be on cross-sectional methods; the class will start with some basic results
needed for any advanced econometrics work, before giving an introduction
to asymptotic and identification techniques and concepts, with some
applications.
Fall ECON1670 S01 16940 F 3:00-5:30(11) (S. Schennach)

ECON 1710. Investments I.
The function and operation of asset markets; the determinants of the
prices of stocks, bonds, options, and futures; the relations between risk,
return, and investment management; the capital asset pricing model,
normative portfolio management, and market efficiency. Prerequisite:
ECON 1110 or 1130; and ECON 1620 or 1630 or APMA 1650 or CSCI
1450.
Fall ECON1710 S01 16653 MWF 11:00-11:50(18) (S. Kuo)
Fall ECON1710 S02 16654 MWF 1:00-1:50(06) (S. Kuo)
Spr ECON1710 S01 25457 MWF 10:00-10:50(03) 'To Be Arranged'
Spr ECON1710 S02 25458 MWF 2:00-2:50(07) 'To Be Arranged'

ECON 1720. Corporate Finance.
A study of theories of decision-making within corporations, with empirical
evidence as background. Topics include capital budgeting, risk, securities
issuance, capital structure, dividend policy, compensation policy, mergers
and acquisitions, real options, financial engineering, securitization.
Prerequisite: ECON 1110 or 1130; and ECON 1620 or 1630 or APMA
1650 or CSCI 1450; ECON 1710.
Fall ECON1720 S01 16655 MWF 9:00-9:50(01) 'To Be Arranged'
Spr ECON1720 S01 25459 MWF 12:00-12:50(05) 'To Be Arranged'

ECON 1730. Venture Capital, Private Equity, and Entrepreneurship.
This course will use a combination of lectures and case discussions to
prepare students to make decisions, both as entrepreneurs and venture
capitalists, regarding the financing of rapidly growing firms. The course will
focus on the following five areas:
1. Business valuation
2. Financing
3. Venture Capital Industry
4. Employment
5. Exit
Fall ECON1730 S01 16656 M 3:00-5:30(05) (R. La Porta)

ECON 1740. Mathematical Finance.
The course is an introduction to both the economics and the mathematics
of finance. Concentrating on the probabilistic theory of continuous
arbitrage pricing of financial derivatives, it provides full treatment of
Black-Scholes option pricing and its extensions to the case of stochastic volatility
and VIX derivatives. More generally, the techniques of change of measure
and risk-neutralization are extensively studied, including in the context of
fixed-income securities. Finally, implications for financial econometrics
(stochastic volatility processes, models of stochastic discount factors) are
broadly discussed.
Spr ECON1740 S01 25460 MWF 10:00-10:50(03) (E. Renault)

ECON 1750. Investments II.
Individual securities: forwards, futures, options and basic derivatives,
pricing conditions. Financial markets: main empirical features, equity
premium and risk-free rate puzzles, consumption based asset pricing
models, stock market participation, international diversification, and topics
in behavioral finance. Prerequisites: ECON 1110 or 1130; ECON 1620
or 1630 or APMA 1650 or CSCI 1450; ECON 1710. Enrollment limited to
100.
Fall ECON1750 S01 16657 TTh 9:00-10:20(02) (K. Rozen)

An experimental course that prepares students for research of the type
conducted in academic finance, hedge funds, and some advanced
consulting firms and I-Banks. Nothing like this is offered at any other
university as far as the instructor knows. Students that do well in this
course should have a head start in academic finance PhD programs, as
well as in MBA programs, quantitatively oriented investment funds, finance
companies, and consulting firms. Prerequisites: ECON 1110 or 1130;
and ECON 1620 or 1630 or APMA 1650. CSCI0040 or equivalent also
recommended as background. Enrollment limited to 20. S/NC
ECON 1760. Financial Institutions
This course analyzes the role of financial institutions in allocating resources, managing risk, and exerting corporate governance over firms. After studying interest rate determination, the risk and term structure of interest rates, derivatives, and the role of central banks, it takes an international perspective in examining the emergence, operation, and regulation of financial institutions, especially banks. Prerequisites: ECON 1110 or 1130; and 1210. Enrollment limited to 100.

Fall ECON1760 S01 16684 MWF 12:00-12:50(12) 'To Be Arranged'

Analyses the role of financial markets and institutions in allocating resources and exerting governance over firms, how regulation shapes finance, and how finance influences the enactment and impact of financial regulation. The class will use: economic theory to develop a solid conceptual framework for understanding how finance affects economic growth, income distribution, and stability; empirical evidence to assess theory; and history to put the role of finance into a long-term framework. Current events will be continuously used to keep the class relevant. Prerequisites: ECON 1110 or 1130; and ECON 1210; and ECON 1630; and ECON 1720 or 1760. Enrollment limited to 30 senior concentrators in Economics, BEO, Applied Math-Economics, Computer Science-Economics, and Math-Economics.

ECON 1770. Fixed Income Securities.
The fixed income market is much larger than the stock market in the U.S. Topics covered in this course include basic fixed income securities, term structure, hedging interest rate risk, investment strategies, fixed income derivatives, mortgage-backed securities and asset-backed securities. Prerequisite: ECON 1110 or 1130; and ECON 1620 or 1630 or APMA 1650 or CSCI 1450; and ECON 1710 or 1720. Enrollment limited to 100.

ECON 1780. Corporate Strategy.
This course teaches analysis of strategic decisions facing an organization. We cover traditional strategy topics such as capabilities and sustainability as well as modern game theory models of competition. A central integrating idea is anticipating the response of other actors in the economy and recognizing that often an organization’s profits depend on the actions of other firms. Prerequisites: ECON 1110 or 1130; and APMA 1650 or ECON 1620 or 1630; and ECON 1720.

ECON 1790. Corporate Governance and Management.
A corporation’s economic success depends on access to human capital and other resources, effective management of these resources, and a governance system that ensures effective decision making. The course offers policy prescriptions in economic incentives and regulatory rules that attempt to align management with investors. Prerequisites: ECON 1110 or 1130; and ECON 1620 or 1630 or APMA 1650 or CSCI 1450; and ECON 1710; and ECON 0710. Enrollment limited to 40.

This course examines how legislation and regulation influences the structure of financial markets and how players in these markets intervene in the political process to create or modify legislative and, regulatory outcomes. Particular emphasis will be placed on the environment in the United States. International comparisons will also be present. Prerequisites: ECON 1110 or 1130; and ECON 1770. Enrollment limited to 30.

ECON 1810. Economics and Psychology.
This course is about the challenges that economic theorists face in their quest for economic models in which decision makers have a "richer psychology" than prescribed by textbook models. The enrichment takes two forms: (i) broadening the set of considerations that affect decision makers’ behavior beyond simple, material self-interest; (ii) relaxing the standard assumption that agents have unlimited ability to perceive and analyze economic environments, and that they reason about uncertainty as "Bayesian statisticians". Special emphasis will be put on the implications of "psychologically richer" models on market behavior. Prerequisite: ECON 1110 or 1130; and MATH 0100 or 0170 or 0180 or 0190 or 0200 or 0350 or advanced placement; and ECON 1620 or 1630 or APMA 1650 or MATH 1610. Enrollment limited to 100.

ECON 1820. Behavioral Economics.
This course provides a grounding in the main areas of study within behavioral economics, including temptation and self control, fairness and reciprocity, reference dependence, bounded rationality, happiness and neuroeconomics. For each area of study we begin with the standard model of rational decision making, and discuss what behavior this model can explain. We then discuss the experimental evidence that indicates that the standard model is missing something important, and the models that have sprung up to account for these violations. Finally, we will look at the implications of these new models for our understanding of how the economy operates.

Fall ECON1820 S01 16665 TTh 2:30-3:50(03) (G. De Clippel)

ECON 1850. Theory of Economic Growth.
Analysis of the fundamental elements that determine economic growth. It examines the role of technological progress, population growth, income inequality, and government policy in the determination of (a) the pattern of economic development within a country, and (b) sustainable differences in per capita income and growth rates across countries. Prerequisites: ECON 1210 and either APMA 0330, 0350 (or equivalent), MATH 0180, 0200, or 0350 (or equivalent). Enrollment limited to 100.

Fall ECON1850 S01 16786 TTh 1:00-2:20(10) (O. Galor)

Existence and efficiency of equilibria for a competitive economy; comparative statistics; time and uncertainty. Prerequisite: ECON 1110 or 1130. Enrollment limited to 100.

ECON 1870. Game Theory and Applications to Economics.
Study of the elements of the theory of games. Non-cooperative games. Repeated games. Cooperative games. Applications include bargaining and oligopoly theory. Prerequisites: ECON 1110 or 1130; and MATH 0100, or 0170, or 0180, or 0190, or 0200, 0350, or advanced placement; and ECON 1620 or 1630 or APMA 1650 or CSCI 1450, or MATH 1610. Enrollment limited to 100.

Spr ECON1870 S01 25461 TTh 2:30-3:50(11) (G. De Clippel)

ECON 1880. Introduction to Two-Sided Matching Markets.
First, we will discuss the several elements that characterize a two-sided matching market and will model several of these markets under the game-theoretic approach. Then, we will introduce the theory of stable matching model by focusing on both the cooperative and non-cooperative aspects of the one-to-one matching markets. Prerequisites: ECON 1110 or 1130; and ECON 1870.

The purpose of this seminar is to bring to the undergraduates concentrating in economics, applied math-economics, mathematical economics and computer science-economics a taste of the first-rate research that is being done in the economics department at Brown. Prerequisites: ECON 1110 or 1130; ECON 1210; ECON 1620 or APMA 1650 or CSCI 1450 or MATH 1610 or 1620; ECON 1629 or 1630. Enrollment limited to 30.

Note this course does not count toward Economics concentration credit.

Students intending to write an honors thesis in economics must register for this class. The goal is to help students with the process of identifying and defining feasible topics, investigating relevant background literature, framing hypotheses, and planning the structure of their thesis. Each student must find a thesis advisor with interests related to their topic and plan to enroll in ECON 1970 during the final semester of senior year.

Note this course does not count toward Economics concentration credit.

Fall ECON1960 S01 16666 W 3:00-5:30(17) (K. Chay)

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ECON 1970. Fall
ECON 2080. Macroeconomics II.
Money, inflation, economic fluctuations and nominal rigidities, monetary and fiscal policy, investment, unemployment, and search and coordination failure.
Spr ECON2080 S01 25468 TTh 1:00-2:20(08) (G. Eggertsson)
ECON 2260. Political Economy I.
This first course in political economy provides theoretical and empirical coverage of the application of economic analysis to political behavior and institutions. This course is designed for students wishing to specialize in political economy but may also be useful for students specializing in related areas, such as development economics and macroeconomics. After starting with a basic overview of candidates and voters, we then turn to specific topics in the areas of electoral systems, legislatures and legislative bargaining, the role of the media, local public finance, and fiscal federalism.

Fall ECON2260 S01 16788 TTh 9:00-10:20(02) (B. Knight)

ECON 2270. Political Economy II.
This is the second course in the political economy sequence. It continues the theoretical and empirical coverage of the economic analysis to political behavior and institutions. This course is designed for students wishing to specialize in political economy. A variety of topics will be covered paying special attention to the formation of skills necessary to become a producer of research and moving away from being just a consumer.

Spr ECON2270 S01 25470 F 9:30-12:00 (P. Dal Bo)

ECON 2320. Economics of Labor and Population.
This course examines identification issues in empirical microeconomics. Focus on the sensible application of econometric methods to empirical problems in economics and policy research -- particularly labor and population economics. The course examines issues that arise when analyzing non-experimental data and provides a guide for tools that are useful for applied research. The course also emphasizes how a basic understanding of theory and institutions can help inform the analysis. By the end of the course, students should have a firm grasp of the types of research designs and methods that can lead to convincing analysis and be comfortable working with large-scale data sets.

ECON 2330. Topics in Labor Economics.
The course introduces students to procedures used to extract evidence from data and to perform rigorous causal inference in order to evaluate public policy on issues such as schooling, the return to education and returns on late intervention programs. Econometric methods, such as Instrumental Variable, Matching, Control Functions, Self Selection Models and Discrete Choice as well as Panel Data Methods, are discussed in detail.

Fall ECON2330 S01 16832 W 3:00-5:30(17) (K. Chay)

ECON 2350. Inequality and Social Policy.
This course covers topics in the design of optimal government policies, and the empirical analysis of those policies in the world. In addition, this course will familiarize students with the basic empirical methods and theoretical models in applied microeconomics. Emphasis is placed on connecting theory to data to inform economic policy. Specific topics include efficiency costs and incidence of taxation, income and corporate taxation, optimal tax theory, tax expenditures and tax-based transfer programs, welfare analysis in behavioral models, and social security and retirement policy.

Fall ECON2350 S01 16795 TTh 10:30-11:50(13) (J. Friedman)

ECON 2360. Economics of Health and Population.
This course is designed to do the following three things: 1) build on your knowledge of the methodological problems and approaches in applied microeconomics with applications from the health economics literature; 2) survey the major topics in Health Economics, and 3) better prepare you to write an empirical microeconomics thesis. By the end of the course you should understand how to draw credible inference using non-experimental data and be able to contribute to public policy debates regarding health and medical care in the US.

ECON 2370. Inequality: Theory and Evidence.
This course uses economic theory to study the problems of inequality. The emphasis is two-fold: (1) to explain persistent resource disparities between individuals or social groups; and, (2) to assess the welfare effects of various equality-promoting policies. Topics include racial stereotypes, residential segregation, distributive justice, incentive effects of preferential policies, dysfunctional identity, and endogenous inequality due to the structure of production and exchange.

ECON 2420. The Structure of Cities.
This course covers standard urban land use theory, urban transportation, sorting across political jurisdictions, hedonics, housing, segregation and crime. Empirical examples are taken primarily from the United States. After taking the course, students will have an understanding of standard urban theory and of empirical evidence on various important applied urban topics. In addition, students will gain practical experience in manipulating spatial data sets and simulating urban models.

ECON 2450. Exchange Scholar Program.
Fall ECON2450 S01 15119 Arranged 'To Be Arranged'
Fall ECON2450 S02 15120 Arranged 'To Be Arranged'
Spr ECON2450 S01 24065 Arranged 'To Be Arranged'

ECON 2470. Industrial Organization.
The focus of this course will be on empirical models for understanding the interactions between firms and consumers in imperfectly competitive markets. Lectures and problem sets will teach canonical models and methods; class discussion will focus on applications of these methods, especially applications outside of traditional areas of industrial organization. Students who take this class will be prepared to conduct research in industrial organization or to "export" methods from industrial organization to other areas of applied microeconomics.

Fall ECON2470 S01 16793 TTh 10:30-11:50(13) (J. Shapiro)

ECON 2480. Public Economics.
Theoretical and empirical analysis of the role of government in private economies. Topics include welfare economics, public goods, externalities, income redistribution, tax revenues, public choice, and fiscal federalism.

ECON 2485. Public Economics I.
This course covers core issues in the design of optimal government policies, and the empirical analysis of those policies in the world. In addition, this course will familiarize students with the basic empirical methods and theoretical models in applied microeconomics. Emphasis is placed on connecting theory to data to inform economic policy. Specific topics include efficiency costs and incidence of taxation, income and corporate taxation, optimal tax theory, tax expenditures and tax-based transfer programs, welfare analysis in behavioral models, and social security and retirement policy.

Fall ECON2485 S01 16795 W 10:30-11:50(13) (J. Friedman)

ECON 2490. Public Finance II.
This course examines empirical work on (1) individual taxation and (2) human capital production. The goal of the course will be to provide graduate students with an overview of recent empirical methods and findings in these areas, and to identify promising research questions for their own work.

ECON 2510. Economic Development I.
The first part of the course covers social interactions, productivity spillovers, systems of cities models, urban growth, and rural-urban migration. The second part of the course covers topics such as durable housing, land market regulation and exclusion, and local political economy. Besides covering basic theoretical models, emphasis is placed on working through recent empirical papers on both the USA and developing countries. Prerequisites: ECON 2050 and 2060.

Fall ECON2510 S01 25471 MW 9:00-10:20 (M. Turner)

ECON 2520. Economic Development II.
This course deals with the economic analysis of institutions, with a particular focus on community-based institutions in developing countries. Institutions covered in this course includes cooperatives, ROSCAS, networks, marriage and the family.

Spr ECON2520 S01 25473 TTh 9:00-10:20(01) (D. Bjerkegren)
ECON 2530. Behavioral and Experimental Economics.
An introduction to the methodology of experimental economics with an emphasis on experiments designed to illuminate problems in organizational design and emergence of institutions, and experiments investigating the operation of social and social-psychological elements of preference such as altruism, inequality aversion, reciprocity, trust, concern for relative standing, envy, and willingness to punish norm violators. Experiments studied will include ones based on the prisoners’ dilemma, dictator game, ultimatum game, and especially the voluntary contribution mechanism (public goods game) and the trust game.

ECON 2580. International Trade.
General equilibrium analysis of the theory of international trade and trade policy under perfect competition; trade under imperfect competition; strategic trade policy; trade and growth; and the political economy of trade policy determination. Empirical analysis of trade theories and policy. Additional topics include the theory of preferential trading areas, trade and labor, and the analytics of trade policy reform.

ECON 2590. Topics in International Economics.
Advanced theoretical and empirical research topics in international economics emphasizing positive and normative analysis of trade, trade policy and international trading agreements, policy reform and stabilization, exchange rate determination, sovereign debt and currency crises and optimum currency areas.

ECON 2600. Bayesian and Structural Econometrics.
This course will cover a number of topics in Bayesian econometrics and estimation of structural dynamic discrete choice models. The Bayesian econometrics part of the course will start with introductory textbook material (Geweke, 2005, Contemporary Bayesian Econometrics and Statistics, denoted by G). A list of 11 topics with corresponding readings is given below. Topics 1-5 will be covered. If time permits, a subset of topics 6-11 determined by interests of the course participants will be covered as well. Readings marked with asterisk * are not required.

ECON 2610. Applied Econometrics.
Topics in applied econometrics. Both cross-sectional and time series issues will be discussed. Special emphasis will be placed on the link between econometric theory and empirical work.

ECON 2630. Econometric Theory.
Standard and generalized linear models, simultaneous equations, maximum likelihood, Bayesian inference, panel data, nonlinear models, asymptotic theory, discrete choice, and limited dependent variable models.

ECON 2640. Microeconometrics.
Topics in microeconometrics treated from a modern Bayesian perspective. Limited and qualitative dependent variables, selectivity bias, duration models, panel data.

ECON 2660. Recent Advances in the Generalized Method of Moments.
Method of Moments (GMM) and Empirical Likelihood (EL). Kernel methods for density and regression estimation. Optimal instruments and local EL. Applications to non-linear time series models, Euler equations and asset pricing.

ECON 2820. Discrete Dynamical Systems and Application to Intertemporal Economics.
This course will focus on the qualitative analysis of discrete dynamical systems and their application for Intertemporal Economics.

ECON 2830. Economic Growth and Comparative Development.
This course will explore the origins of the vast inequality in income per capita across countries, regions and ethnic groups. It will analyze the determinants of growth process over the entire course of human history and will examine the role of deeply-rooted geographical, institutional, cultural, and genetic factors in the observed pattern of uneven development across the globe.

ECON 2840. Empirical Analysis of Economic Growth.
Examines economic growth, focusing on the effects of technological change, fertility, income inequality, and government policy. ECON 2830 is strongly recommended.

ECON 2850. Theory of Innovation-Based Growth.
Issues concerning innovation-based growth theory, including scale effects and effects of research and development versus capital accumulation. Interactions between growth and phenomena such as fluctuations, unemployment, natural resources, competition, regulation, patent policy, and international trade.

ECON 2860. Comparative Development.
Weighing the shadow of history on contemporary economic performance occupies an increasing part of the agenda among growth and development economists. This course will focus on recent contributions in the literature of the historical determinants of comparative development paying particular attention on how to integrate the use of Geographic Information Systems (GIS) in the research inquiry. The goal is to get you thinking about the big historical processes that have shaped the modern world. We will go over background concepts, critically review recent works and talk about new research designs, like that of spatial regression discontinuity.

ECON 2890C. Topics in Macro and Monetary Economics.
This is a graduate class that covers selected topics at the intersection of macroeconomics and monetary economics, for students in the second year of the PhD and above. The leading theme of the class is the current economic crisis and how it can be modeled. The syllabus is evolving.

ECON 2890D. Topics in Macroeconomics, Development and Trade.
This is a graduate class that covers selected topics at the intersection of macroeconomics, economic development and trade, for students in the second year of the PhD and above. The leading theme of the class is the determinants of the observed cross-country differences in income per capita and growth rates, with a focus on the long run. We start by reviewing theories where factor markets function perfectly and only aggregates matter. We then move to non-aggregative theories, placing special emphasis on theories of financial frictions. We spend some time studying the stochastic growth model with partially uninsurable idiosyncratic risk.

ECON 2920A. Advanced Econometrics - Microeconometrics from a Semiparametric Perspective.
This course is concerned with a rigorous, state-of-the-art introduction to Micro-econometrics. In particular, we will review many of the more recent contributions in Microeconometric Theory. While the focus of this course is theoretical, we will also be concerned with applications and the applicability of these methods. More specifically, we will consider nonparametric regression and density estimation methods, as well as methods and models for binary and categorical dependent variables, for limited dependent variables in general, and for models of selection. We will also discuss more general nonparametric IV models. Prerequisites are: Introductory Econometrics (at the level of the Wooldridge (2002)).

ECON 2920B. Topics in Game Theory.
No description available.

ECON 2930. Workshop in Applied Economics.
No description available.

ECON 2950. Workshop in Econometrics.
No description available.

ECON 2960. Workshop in Macroeconomics and Related Topics.
No description available.
ECON 2970. Workshop in Economic Theory.
No description available.
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ECON 2971. Race and Inequality Seminar.
This is a workshop primarily for graduate students and faculty in the Department of Economics where original research on issues of race and inequality are presented by external visitors, along with Brown faculty and graduate students. No course credit.

ECON 2980. Reading and Research.
Individual research projects. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ECON 2990. Thesis Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing a thesis.
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<td>24066 Arranged</td>
<td>'To Be Arranged'</td>
<td></td>
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</tr>
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</table>
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Helvetica was used instead of Arial.

The editor may contact Leepfrog for a draft with the correct fonts in place.