**PROGRAM OF STUDY**

The program in economics is intended to equip students with the basic tools to understand the operation of a modern economy: the origin and role of prices and markets, the allocation of goods and services, and the factors that enter into the determination of income, employment, and the price level. Students can satisfy the requirements of the standard track of the BA in economics in two ways, Track A and Track B. The specialization in data science provides training in computation and data analysis beyond the basic methods discussed in the empirical methods sequence. The specialization in business economics is organized around the fundamental economic theory and empirical methods that students interested in pursuing careers in the private sector, the non-profit sector, and the public sector (among others) will find useful.

**BA IN ECONOMICS: STANDARD TRACK (TRACK A AND TRACK B)**

The program in economics can be divided into five component parts:

1. **Fundamentals**: provides students with the basic skills required to be successful in the major.
2. **Core curriculum**: consists of three courses designed to introduce students to the "economic approach."
3. **Empirical Methods sequence**: provides students with the fundamental techniques of data analysis.
4. **Economic Policy course**: applies the tools developed in the core curriculum to issues of fiscal policy, monetary policy, and other policy discussions relevant to the current state of the economy.
5. **Electives**: allows students to tailor the economics major to their interests.

**PROGRAM REQUIREMENTS, STANDARD TRACK (TRACK A AND TRACK B)**

**Fundamentals**

Students must begin the economics major by demonstrating competence in basic calculus and principles of economics. The fundamentals sequence consists of the following courses. The first two are required; the second two are strongly recommended:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13300</td>
<td>Elementary Functions and Calculus III</td>
<td>100</td>
</tr>
<tr>
<td>or MATH 15300</td>
<td>Calculus III</td>
<td></td>
</tr>
<tr>
<td>or MATH 16300</td>
<td>Honors Calculus III</td>
<td></td>
</tr>
<tr>
<td>or MATH 16310</td>
<td>Honors Calculus III (IBL)</td>
<td></td>
</tr>
<tr>
<td>MATH 15250</td>
<td>Mathematical Methods for Economic Analysis</td>
<td>100</td>
</tr>
<tr>
<td>or MATH 20400</td>
<td>Analysis in Rn II</td>
<td></td>
</tr>
<tr>
<td>or MATH 20410</td>
<td>Analysis in Rn II (accelerated)</td>
<td></td>
</tr>
<tr>
<td>or MATH 20420</td>
<td>Analysis in Rn II (IBL)</td>
<td></td>
</tr>
<tr>
<td>or MATH 20800</td>
<td>Honors Analysis in Rn II</td>
<td></td>
</tr>
<tr>
<td>ECON 10000</td>
<td>Principles of Microeconomics</td>
<td>100</td>
</tr>
<tr>
<td>ECON 10200</td>
<td>Principles of Macroeconomics</td>
<td>100</td>
</tr>
</tbody>
</table>

Students who wish to complete the major with more rigorous mathematics may substitute MATH 20400 Analysis in Rn II for MATH 15250 Mathematical Methods for Economic Analysis.

**Calculus**

Students who have an interest in the major should take calculus at the highest level for which they qualify.

1. **MATH 13000s**: Students must complete MATH 13300 Elementary Functions and Calculus III prior to enrolling in ECON 20000 The Elements of Economic Analysis I. Students who have completed MATH 13300 Elementary Functions and Calculus III may enroll in MATH 15250 Mathematical Methods for Economic Analysis concurrently with ECON 20000 The Elements of Economic Analysis I. Students may find it useful to complete MATH 15250 Mathematical Methods for Economic Analysis prior to enrolling in the Elements of Economic Analysis sequence altogether.

2. **MATH 15000s**: Students enrolling in the MATH 15000s sequence must complete MATH 15250 Mathematical Methods for Economic Analysis prior to enrolling in ECON 20000 The Elements of Economic Analysis I. Students must complete MATH 15300 Calculus III prior to enrollment in ECON 20200 The Elements of Economic Analysis III.

3. **MATH 16000s and 16010s**: Students enrolling in the MATH 16000s sequences must complete MATH 16200 Honors Calculus II or MATH 16210 Honors Calculus II (IBL) before enrolling in ECON 20000 The Elements of Economic Analysis I. Enrollment in ECON 20000 The Elements of Economic Analysis I.
requires completion or concurrent enrollment in MATH 16300 Honors Calculus III/MATH 16310 Honors Calculus III (IBL) and demonstrated competency in Microeconomics (see Core Curriculum for details).

4. MATH 18000s: Students who are interested in double majoring with a physical sciences major (chemistry, biochemistry, physics, astrophysics, molecular engineering, and/or statistics) may use the MATH 18000s to satisfy the calculus and linear algebra requirements of the economics major. They should take MATH 18300-18400-18500 Mathematical Methods in the Physical Sciences I-II-III. Students double majoring with a physical sciences major should not take MATH 15250 Mathematical Methods for Economic Analysis or MATH 15300 Calculus III. Students who do not complete the full sequence of MATH 18300-18400-18500 Mathematical Methods in the Physical Sciences I-II-III will need to complete MATH 13300 Elementary Functions and Calculus III/MATH 15300 Calculus III/MATH 16300 Honors Calculus III, MATH 15250 Mathematical Methods for Economic Analysis, and MATH 19620 Linear Algebra/STAT 24300 Numerical Linear Algebra for the economics major requirements. For further questions regarding course substitutions in the MATH 18000s sequence, please consult the Department of Mathematics.

Students may satisfy the MATH 15300 Calculus III requirement by placement (based on the Higher-Level Math Test administered by the College prior to Orientation) and completion of a higher-level proof-based mathematics course (MATH 15910 Introduction to Proofs in Analysis or MATH 20250 Abstract Linear Algebra or higher). In this case, students should continue their mathematics training with the highest mathematics level for which they qualify.

Principles of Economics

Students are expected to begin their study of economics with ECON 10000 Principles of Microeconomics and ECON 10200 Principles of Macroeconomics. These two introductory courses are designed for students with limited or no prior course work in economics. Students are strongly encouraged to complete ECON 10000 Principles of Microeconomics prior to ECON 20000 The Elements of Economic Analysis I (or ECON 20010 The Elements of Economic Analysis I Honors) and ECON 10200 Principles of Macroeconomics prior to ECON 20200 The Elements of Economic Analysis III (or ECON 20210 The Elements of Economic Analysis III Honors). While these two courses provide basic economics knowledge, they are not required in the standard track of the major. Students who matriculated at the University of Chicago in 2016–17 or later may use ECON 10200 Principles of Macroeconomics to fulfill one of the standard track economics elective requirements.

Core Curriculum

The core curriculum consists of three courses. Students may use the standard or honors sequence to satisfy this requirement. The honors sequence is designed for students interested in economics research and/or use of more sophisticated mathematical models.

<table>
<thead>
<tr>
<th>Standard Core Sequence</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000</td>
<td>The Elements of Economic Analysis I</td>
</tr>
<tr>
<td>ECON 20100</td>
<td>The Elements of Economic Analysis II</td>
</tr>
<tr>
<td>ECON 20200</td>
<td>The Elements of Economic Analysis III</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>or Honors Core Sequence</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20010</td>
<td>The Elements of Economic Analysis I Honors</td>
</tr>
<tr>
<td>ECON 20110</td>
<td>The Elements of Economic Analysis II Honors</td>
</tr>
<tr>
<td>ECON 20210</td>
<td>The Elements of Economic Analysis III Honors</td>
</tr>
</tbody>
</table>

Most students begin the core curriculum in their second year. Those who wish to begin it during their first year must demonstrate competence with the fundamental skills needed in that sequence in the following ways:

- Students must either pass the economics placement test or complete ECON 10000 Principles of Microeconomics prior to starting ECON 20000 The Elements of Economic Analysis I (or ECON 20010 The Elements of Economic Analysis I Honors). No standardized external exams (IB, AP, nor A-Levels) will substitute, and they rarely serve as sufficient preparation for the economics placement test. Note that the placement test will only be offered in the evening of the first day of Autumn Quarter.
- Students must satisfy the calculus requirement as discussed in Calculus.

Empirical Methods

In the modern economy, quantitative methods are highly valued skills. Students must satisfy the empirical methods component of the economics major in one of two ways, either as a three-quarter sequence or a two-quarter sequence. Students must complete the empirical methods sequence by the end of third year.

Option A: The three-quarter empirical methods sequence is comprised of a course in linear algebra, a course in statistics, and a course in econometrics. This sequence of courses covers a broad set of topics that will enhance the student’s quantitative toolkit. The topics covered in this sequence will lay the foundation for further quantitative training in the major.
Option B: The two-quarter empirical methods sequence is comprised of a course which combines the basic material in linear algebra and statistics that is utilized in many economic applications, and a course in econometrics. Students who complete the empirical methods component of the major with just two courses (ECON 21010 Statistical Methods in Economics and ECON 21020 Econometrics) must complete an additional economics elective, as discussed in Electives.

Details about each sequence are below. We strongly encourage students to choose the highest mathematical tracks for which they are qualified. Students unsure of which sequence to choose should consult with the Undergraduate Office in the Department of Economics as well as the Department of Mathematics and Department of Statistics.

Option A: Three-Quarter Empirical Methods Sequence

In order to satisfy the empirical methods component of the economics major using a three-quarter sequence, students must complete the following courses. They must be taken in consecutive quarters, beginning with Linear Algebra and concluding with Econometrics:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 19620</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>or STAT 24300</td>
<td>Numerical Linear Algebra</td>
</tr>
<tr>
<td>or MATH 20250</td>
<td>Abstract Linear Algebra</td>
</tr>
<tr>
<td>or MATH 20700</td>
<td>Honors Analysis in Rn I</td>
</tr>
<tr>
<td>STAT 23400</td>
<td>Statistical Models and Methods</td>
</tr>
<tr>
<td>or STAT 24400</td>
<td>Statistical Theory and Methods I</td>
</tr>
<tr>
<td>or STAT 24410</td>
<td>Statistical Theory and Methods Ia</td>
</tr>
<tr>
<td>ECON 21020</td>
<td>Econometrics</td>
</tr>
<tr>
<td>or ECON 21030</td>
<td>Econometrics - Honors</td>
</tr>
</tbody>
</table>

Total Units: 300

Students may not use AP Statistics credit to satisfy the statistics requirement. Students with AP credit will need to expand on their training with STAT 23400 Statistical Models and Methods, STAT 24400 Statistical Theory and Methods I, or STAT 24410 Statistical Theory and Methods Ia. Students may not earn credit for both STAT 22000 Statistical Methods and Applications (via course enrollment or AP exam) and STAT 23400 Statistical Models and Methods.

Students who wish to pursue more advanced training in empirical methods may complete STAT 24300 Numerical Linear Algebra or MATH 20250 Abstract Linear Algebra or MATH 20700 Honors Analysis in Rn I; either STAT 24400 Statistical Theory and Methods I or STAT 24410 Statistical Theory and Methods Ia; and ECON 21030 Econometrics - Honors.

Option B: Two-Quarter Empirical Methods Sequence

In order to satisfy the empirical methods component of the economics major using a two-quarter sequence, students must complete the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21010</td>
<td>Statistical Methods in Economics</td>
</tr>
<tr>
<td>ECON 21020</td>
<td>Econometrics</td>
</tr>
</tbody>
</table>

Total Units: 200

Students should not begin the empirical methods sequence earlier than concurrently with ECON 20100 The Elements of Economic Analysis II and should take ECON 21010 Statistical Methods in Economics and ECON 21020 Econometrics in consecutive quarters.

Students with credit for both MATH 19620 Linear Algebra and STAT 23400 Statistical Models and Methods (or more advanced equivalents) may not also earn credit for ECON 21010 Statistical Methods in Economics.

Economic Policy

The economic policy requirement provides students the opportunity to apply methods and tools taught in the economics core sequence to analyze current issues centered around monetary and fiscal policy. Most students will complete the economic policy requirement with ECON 23950 Economic Policy Analysis, but students interested in learning more formal approaches may use one of the other macroeconomics courses listed below to satisfy the requirement.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 23950</td>
<td>Economic Policy Analysis</td>
</tr>
<tr>
<td>or ECON 23200</td>
<td>Topics in Macroeconomics</td>
</tr>
</tbody>
</table>
or ECMA 33220  Introduction to Advanced Macroeconomic Analysis  
or ECMA 33330  Introduction to Dynamic Economic Modeling

Students who complete more than one of the above courses may apply the additional courses to satisfy the economics elective requirements. ECON 23950 Economic Policy Analysis may not count as an economics elective.

Electives

All students in the economics major must complete a minimum of four additional economics courses to broaden their exposure to areas of applied economics or economic theory. Students who complete the empirical methods component with the two-quarter sequence must complete five economics electives. These courses must have a higher course number than ECON 20210 The Elements of Economic Analysis III Honors, with the following exceptions: ECON 21010 Statistical Methods in Economics, ECON 21020 Econometrics, ECON 21030 Econometrics - Honors, and ECON 23950 Economic Policy Analysis may not be used to satisfy the economics elective requirements; students who matriculated in 2016–17 or later may use ECON 10200 Principles of Macroeconomics to satisfy one of the economics elective requirements.

Advanced undergraduate students may use economics master’s-level (ECMA) courses to satisfy the major elective requirements.

Students may use one course (from the pre-approved outside electives list or approved by petition) outside of the University of Chicago Department of Economics to satisfy their elective requirements. Students may apply only one of the following two exceptions to this rule:

Exception (A): Students may count an additional outside course to satisfy elective requirements of the major as long as it is drawn from the pre-approved outside electives listed below.

Exception (B): Students who participate in a Study Abroad program may petition to count an additional outside course completed at the host institution to satisfy elective requirements of the major. Students pursuing the standard economics track and data science specialization may petition to count up to two courses outside of the University of Chicago Department of Economics (whether through a different UChicago department or through a Study Abroad program) toward the economics electives requirement. Business courses will not be approved to satisfy the ECON elective requirement. The remaining electives must be completed with the University of Chicago Department of Economics. Petitions must be submitted prior to course enrollment to be considered.

These rules imply that at most two courses completed outside the University of Chicago Department of Economics may be used to satisfy the elective requirements of the major. For example, if a student completes two courses as part of a Study Abroad program, then the student has met the cap of the two outside electives and must complete the remaining elective requirements in the University of Chicago Department of Economics.

The following are pre-approved outside electives for the standard economics track:

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Mathematics</th>
<th>University of Chicago Booth School of Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMSC 14100</td>
<td>MATH 20500</td>
<td>BUSN 20410</td>
</tr>
<tr>
<td>or BUSN 20550</td>
<td>or MATH 20510</td>
<td>or BUSN 35200</td>
</tr>
<tr>
<td>Introduction to Computer Science I</td>
<td>Analysis in Rn III</td>
<td>Corporation Finance</td>
</tr>
<tr>
<td>Application Development</td>
<td>Analysis in Rn III (accelerated)</td>
<td>Corporation Finance</td>
</tr>
<tr>
<td></td>
<td>Analysis in Rn III (IBL)</td>
<td>Data Driven Marketing</td>
</tr>
<tr>
<td></td>
<td>Honors Analysis in Rn III</td>
<td>Data Science for Marketing Decision Making</td>
</tr>
<tr>
<td></td>
<td>Basic Theory of Ordinary Differential Equations</td>
<td>Behavioral Economics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or BUSN 20710</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or BUSN 38120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Study of Behavioral Economics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or BUSN 37105</td>
</tr>
</tbody>
</table>

The following are pre-approved outside electives for the standard economics track:

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMSC 14100</td>
<td>MATH 20500</td>
</tr>
<tr>
<td>or BUSN 20550</td>
<td>or MATH 20510</td>
</tr>
<tr>
<td>Introduction to Computer Science I</td>
<td>Analysis in Rn III</td>
</tr>
<tr>
<td>Application Development</td>
<td>Analysis in Rn III (accelerated)</td>
</tr>
</tbody>
</table>
BUSN 20800  
or BUSN 41201  
Big Data

BUSN 20820  
or BUSN 41203  
Financial Econometrics

BUSN 20810  
or BUSN 41204  
Machine Learning

BUSN 20900  
or BUSN 42001  
Competitive Strategy

* BUSN 2XXXX-level (undergraduate-only) versions of these courses will follow some College policies regarding registration, scheduling, grading, etc. The BUSN 3XXXX-level (and higher) courses will be subject to Chicago Booth’s academic and administrative policies. Consult the Chicago Booth website (https://www.chicagobooth.edu/programs/taking-courses-at-booth/) for details.

Courses in other degree programs may be considered for elective credit through petition. To be considered, these courses must require the equivalent prerequisite course work of ECON 20100 The Elements of Economic Analysis II. Petitions must be submitted prior to course enrollment to be considered. Graduate level economics courses will be counted for elective credit, but consultation with the Undergraduate Office in advance of course registration is required. Note: Provisional and early final grades are not given for economics graduate courses or BUSN 3XXXX-level (and higher) courses. Economics graduate courses and BUSN 3XXXX-level (and higher) courses should not be taken in the student’s graduating quarter unless the student will have completed all forty-two credits required for graduation, not counting the graduate course, and all requirements for all majors.

Summary of Requirements

For summaries of requirements for the BA in economics (Tracks A and B), see below.

SAMPLE PROGRAMS FOR TRACKS A AND B

The following is a recommended sample plan of study (excluding four elective courses) for those students entering with the MATH 13000s sequence:

<table>
<thead>
<tr>
<th>First Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13100</td>
<td></td>
<td>MATH 13200</td>
<td>MATH 13300</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECON 10000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000</td>
<td></td>
<td>ECON 20100</td>
<td>ECON 20200</td>
</tr>
<tr>
<td>MATH 15250</td>
<td></td>
<td>ECON 10200</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 23950</td>
<td></td>
<td>STAT 23400</td>
<td>ECON 21020</td>
</tr>
<tr>
<td>MATH 19620</td>
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</tbody>
</table>

The following is a recommended plan of study (excluding four economics elective courses) for those students entering with the MATH 15000s or MATH 16000s sequence:

<table>
<thead>
<tr>
<th>First Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 15100</td>
<td></td>
<td>MATH 15200</td>
<td>MATH 15250</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECON 10000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000</td>
<td></td>
<td>ECON 20100</td>
<td>ECON 20200</td>
</tr>
<tr>
<td>MATH 15300</td>
<td></td>
<td>MATH 19620</td>
<td>STAT 23400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ECON 10200</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 23950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 21020</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following is a recommended plan of study (excluding five elective courses) for those students completing the two-quarter empirical methods sequence. Note that this plan of study can be used in conjunction with any calculus sequence:

<table>
<thead>
<tr>
<th>First Year</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13100</td>
<td></td>
<td>MATH 13200</td>
<td>MATH 13300</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECON 10000</td>
</tr>
</tbody>
</table>
Students wanting to appropriately plan their economics major with the courses MATH 20400 Analysis in Rn II, STAT 24400 Statistical Theory and Methods I, or STAT 24410 Statistical Theory and Methods Ia should consult with the Undergraduate Program Office in the Department of Economics.

BA IN ECONOMICS WITH SPECIALIZATION IN BUSINESS ECONOMICS

The specialization in business economics is organized around the fundamental economic theory and empirical methods that students interested in pursuing careers in the private sector, the non-profit sector, and the public sector (among others) will find useful. Students who begin by following the standard economics major path have several decision points at which they can choose to specialize in business economics. Students should consult early in the first year with the Department of Economics Undergraduate Program to design a curriculum that satisfies their professional goals.

Students pursuing the standard track of the Economics major must complete a full calculus sequence. However, completion of the full calculus sequence is not required for the Specialization in Business Economics. Students are strongly urged to continue their training with the highest mathematics level for which they qualify to ensure the continued development of a strong quantitative toolkit that will be useful in the pursuit of their future endeavors.

Note that BUSN 2XXXX-level (undergraduate-only) versions of courses offered by the University of Chicago Booth School of Business (Chicago Booth) will follow some College policies regarding registration, scheduling, grading, etc. The BUSN 3XXXX-level (and higher) courses will be subject to Chicago Booth’s academic and administrative policies. Consult the Chicago Booth website (https://www.chicagobooth.edu/programs/taking-courses-at-booth/faq/#beecf17b3e304bae93c50f4f595c27d6) for details.

Early final grades will be given for graduating students in BUSN 2XXXX-level courses. The Booth Registrar’s Office will coordinate with instructors to issue early final grades for graduating students in College-level Booth courses.

Note: Early final grades are not given for BUSN 3XXXX-level (and higher) courses. These courses should not be taken in the student’s graduating quarter unless the student will have completed all graduation requirements, irrespective of the BUSN 2XXXX-level course.

As with the standard economics program, this specialization is divided into five component parts:

1. **Core**: The core component is designed to introduce students to the tools of basic economic analysis. These courses include fundamental course work in microeconomics, macroeconomics, and business education.

2. **Methods**: The methods component is designed to introduce students to the different toolkits on which economists rely to analyze problems in both microeconomics and macroeconomics.

3. **Empirical Analysis**: The empirical analysis component provides students with the fundamental techniques of data analysis. These courses emphasize the application of empirical methods to relevant examples and develop the essential computer skills students need to lead successful careers.

4. **Perspectives**: The perspectives requirement recognizes that successful careers require broad-based understanding of the markets and industries in which our potential majors are likely to participate. This requirement is intended to facilitate both the acquisition of sector-specific knowledge and/or job-specific skills that are likely to provide context for the student’s economics and business training.

5. **Electives**: Electives from the University of Chicago Booth School of Business and the Department of Economics allow students to tailor the program to their interests.

**Core**

The core component is designed to introduce students to the tools of basic economic analysis. These courses include fundamental course work in microeconomics and macroeconomics. These courses introduce theory but emphasize the application of these tools to standard problems that students are likely to encounter as they carry out their professional activities. The core component consists of three courses:

- **ECON 10000 Principles of Microeconomics**
- **ECON 20000 The Elements of Economic Analysis I**
- **ECON 20100 The Elements of Economic Analysis I Honors**

**ECON 10200 Principles of Macroeconomics**

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### Second Year

<table>
<thead>
<tr>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000</td>
<td>ECON 20100</td>
<td>ECON 20200</td>
</tr>
<tr>
<td>MATH 15250</td>
<td>ECON 10200</td>
<td></td>
</tr>
</tbody>
</table>

### Third Year

<table>
<thead>
<tr>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 23950</td>
<td>ECON 21020</td>
</tr>
<tr>
<td>ECON 21010</td>
<td></td>
</tr>
</tbody>
</table>
### Economics

**The Elements of Economic Analysis III**

- or ECON 20200
- or ECON 20210

One Foundations of Business Education course, chosen from: *  
- BUSN 20100: Financial Accounting
- BUSN 20330: Building the New Venture
- BUSN 20400: Investments
- BUSN 20410: Corporation Finance
- BUSN 20702: Managerial Decision Making
- BUSN 20600: Marketing Management
- BUSN 20500: Operations Management
- BUSN 20800: Big Data
- BUSN 20900: Competitive Strategy

**Total Units**: 300

* BUSN 2XXX-level (undergraduate-level) versions of these courses will follow some College policies regarding registration, scheduling, grading, etc. The BUSN 3XXXX-level (and higher) versions will be subject to Chicago Booth's academic and administrative policies. Consult the Chicago Booth website for details. Students who have taken a BUSN 2XXXX-level course cannot enroll in the 3XXXX-level (or higher) equivalent course and vice-versa.

### Methods

The methods component of the major is designed to expose students to the different toolkits on which economists rely to analyze problems. These methods courses include offerings in basic price theory, game theory, and experimental methods. This component also includes course work that will be useful in macroeconomic and financial analysis. Students must complete one microeconomics methods course and one macroeconomics methods course from the lists below:

#### One Microeconomics Methods course chosen from:  
- ECON 10700 or ECON 20700: Introductory Game Theory
- or ECON 11700 or ECON 21800: Introduction to Behavioral and Experimental Economics
- ECON 20100 or ECON 20110: The Elements of Economic Analysis II
- ECON 15010: Investments: From Economics to Finance
- ECON 19200: Introduction to Issues and Methods in Microeconomics

**Total Units**: 200

* Students may count either ECON 10700 or ECON 20700, but not both, toward the 42 credits required for graduation.

### Empirical Analysis

The objective of the empirical analysis component is to ensure that students who complete the major are comfortable carrying out data analysis in various forms. This requires that students gain familiarity with basic
statistics and basic econometric methods. These courses will emphasize the application of empirical methods to relevant examples and develop essential computer skills.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>STAT 22000</td>
<td>Statistical Methods and Applications *</td>
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<td>or ECON 11010</td>
<td>Introduction to Statistical Methods in Economics</td>
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<tr>
<td>or ECON 21010</td>
<td>Statistical Methods in Economics</td>
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<tr>
<td>or STAT 23400</td>
<td>Statistical Models and Methods</td>
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<tr>
<td>or STAT 24400</td>
<td>Statistical Theory and Methods I</td>
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<tr>
<td>or STAT 24410</td>
<td>Statistical Theory and Methods Ia</td>
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<tr>
<td>ECON 11020</td>
<td>Introduction to Econometrics</td>
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<td>or ECON 21020</td>
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</tr>
<tr>
<td>or ECON 21030</td>
<td>Econometrics - Honors</td>
<td></td>
</tr>
</tbody>
</table>

Total Units 200

* Examination credit for STAT 22000 will not count toward the requirements for the major.

Perspectives

The perspectives requirement consists of one course that can come from any division in the University. This requirement recognizes that successful careers require broad-based understanding of the markets and industries in which our students are likely to participate. This requirement is intended to facilitate the acquisition of sector-specific knowledge and/or job-specific skills that are likely to provide context for the economics and business training to which students will receive exposure while completing the specialization in business economics. It is expected that students use these perspectives component as a stepping-stone to design a meaningful set of courses that complement their training in business economics.

It is important to emphasize that there are many courses across the University that students can use to satisfy the perspectives requirement. A list of courses pre-approved for this requirement may be found on the departmental website (https://economics.uchicago.edu/content/ba-economics-specialization-business-economics/), but students may petition the Department of Economics to use other suitable courses. ECON, ECMA, and Chicago Booth (BUSN) courses may not be used to satisfy the perspectives requirement.

Electives

Students must take five electives to complete the specialization in business economics: three from the University of Chicago Booth School of Business, as defined below, and two from the University of Chicago Department of Economics. In exceptional circumstances, a student may, by petition, use a course from outside Chicago Booth and the Department of Economics as, at most, one business economics elective. Petitions must be submitted prior to course enrollment to be considered. Chicago Booth (BUSN) courses may not be used to satisfy the two Department of Economics (ECON) elective requirements.

A note on professional school courses: The rules of the College allow students to use no more than four courses from professional schools (e.g., BUSN 3XXXX-level/4XXXX-level courses, Harris Public Policy, etc.) to satisfy degree requirements. The specialization in business economics requires four courses taken at Chicago Booth. If a student successfully petitions to use a course from a professional school other than Chicago Booth (e.g., the Law School or the Harris School of Public Policy) in the major, then College rules require that the approved course substitute for a Chicago Booth elective. Be aware that undergraduates may enroll in a total of six professional school courses, but the last two courses would be ineligible to satisfy any undergraduate degree requirement. BUSN 2XXXX-level courses are exempt from the professional school policy.

Courses in the University of Chicago Booth School of Business

The courses at Chicago Booth that students can use to meet the electives requirements are categorized in eight different “bundles.” Courses in the table below with an asterisk (*) are also eligible for the Foundations of Business Education requirement; however, a course used to satisfy the core requirement in the major cannot be also counted as an elective. Students must complete four distinct Booth courses: one Foundations in Business Education and three electives. In order to expose students to different subfields in business education, the four Booth courses used to fulfill the core and elective requirements must be drawn from at least three of the thematic bundles listed below.

Note: BUSN 2XXXX-level (undergraduate-level) versions of these courses will follow some College policies regarding registration, scheduling, grading, etc. The BUSN 3XXXX-level and above versions will be subject to Chicago Booth’s academic and administrative policies. Consult the Chicago Booth website (https://www.chicagobooth.edu/programs/taking-courses-at-booth/faq/#beecf17b3c304ba93c504595c27d6) for details. Students who have taken a BUSN 2XXXX-level course cannot enroll in the 3XXXX-level (or higher) equivalent, and vice versa.

CHICAGO BOOTH COURSES THAT MEET THE ELECTIVES REQUIREMENT

Accounting
<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BUSN 20100</td>
<td>Financial Accounting</td>
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<tr>
<td>BUSN 20101</td>
<td>Managerial Accounting</td>
</tr>
<tr>
<td>BUSN 20140</td>
<td>Accounting and Financial Analysis</td>
</tr>
<tr>
<td>BUSN 20150</td>
<td>Financial Statement Analysis</td>
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<tr>
<td></td>
<td>Entrepreneurship</td>
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<tr>
<td>BUSN 20330</td>
<td>Building the New Venture</td>
</tr>
<tr>
<td>BUSN 20340</td>
<td>Developing a New Venture</td>
</tr>
<tr>
<td>BUSN 20920</td>
<td>Social Entrepreneurship and Innovation</td>
</tr>
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<td></td>
<td>Finance</td>
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<tr>
<td>BUSN 20400</td>
<td>Investments</td>
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<td>BUSN 20405</td>
<td>Financial Instruments</td>
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<td>BUSN 20410</td>
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<td>BUSN 20701</td>
<td>Managing in Organizations</td>
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<td>BUSN 20711</td>
<td>Choosing Leadership</td>
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<td>BUSN 20600</td>
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<td>BUSN 20610</td>
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<td>BUSN 20620</td>
<td>Data Driven Marketing</td>
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<td>BUSN 20510</td>
<td>Managerial Decision Modeling</td>
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<td>Supply Chain Management</td>
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<td>Statistics</td>
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<td>Big Data</td>
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<td>Machine Learning</td>
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<tr>
<td>BUSN 20820</td>
<td>Financial Econometrics</td>
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<td>Strategy and the Business Environment</td>
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<td>BUSN 20230</td>
<td>International Financial Policy</td>
</tr>
<tr>
<td>BUSN 20231</td>
<td>Economics in a Globalized World</td>
</tr>
<tr>
<td>BUSN 20900</td>
<td>Competitive Strategy</td>
</tr>
<tr>
<td>BUSN 20940</td>
<td>Business Ethics</td>
</tr>
</tbody>
</table>

* These courses are also eligible for the Foundations of Business Education requirement; however, a course used to satisfy the core requirement in the major cannot also be counted as an elective. Students must complete four distinct Chicago Booth courses: one Foundations of Business Education course and three electives. In order to expose students to different subfields in business education, the four Chicago Booth courses used to fulfill the core and elective requirements must be drawn from at least three of the thematic bundles listed here.

### Courses in the Department of Economics

Students in the specialization in business economics must complete at least two electives in the Department of Economics. These may be ECON courses with numbers between 10200 and 19800, or numbers above 20210, assuming that the student has the appropriate prerequisites for the course. Note that ECON 11010, ECON 11020, ECON 19000, ECON 19100, ECON 21010, ECON 21020, ECON 21030, and ECON 23950 are exceptions to this and cannot be used to satisfy the elective requirement for the specialization in business economics. Students may not receive major credit for both ECON 10000 and ECON 20000/ECON 20010. Students may not receive credit for both ECON 10200 and ECON 20200/ECON 20210.

Students are required to take two economics electives from the University of Chicago Department of Economics. These courses tend to build more directly on the tools and methods discussed in microeconomics, macroeconomics, and econometrics course work. In exceptional cases, students may petition for an outside course to count as an elective by submitting a general petition along with a syllabus of the course for the Co-Directors to review. For outside courses to be considered, the department requires that these courses use economic methods as a mode of analysis. Students must provide compelling reasoning as to why this course should count as a business economics elective and not as a general education credit. Only courses with
substantive economics will be considered. Chicago Booth (BUSN) courses will not be considered. Petitions should be submitted prior to course enrollment.

**Study Abroad**

Students pursuing the business economics specialization may petition to count up to two courses outside of the University of Chicago Department of Economics toward the major requirements. One study abroad course may be petitioned to count toward the Perspectives requirement, and one study abroad course may be petitioned to count toward the ECON elective requirement. Business courses will not be approved to satisfy the Perspectives requirement or the ECON elective requirement. The remaining ECON elective must be completed with the UChicago Department of Economics. Chicago Booth does not approve course substitutions from other departments or from other institutions. As such, study abroad courses may not be applied toward the BUSN course requirements of the business economics specialization. Petitions must be submitted to the department prior to course enrollment to be considered.

**Summary of Requirements**

For a summary of requirements for the BA in Economics with Specialization in Business Economics, see below.

**BA in ECONOMICS WITH SPECIALIZATION IN DATA SCIENCE**

The specialization in data science provides training in computation and data analysis beyond the basic methods discussed in the empirical methods sequence. The specialization in data science and the standard BA in economics share eight courses:

**Two fundamentals courses:**

- MATH 13300 Elementary Functions and Calculus III OR MATH 15300 Calculus III OR MATH 16300 Honors Calculus III
- MATH 15250 Mathematical Methods for Economic Analysis OR MATH 20400 Analysis in R^n II OR MATH 20410 Analysis in R^n II (accelerated) OR MATH 20800 Honors Analysis in R^n II

**One of the following:**

- ECON 20010-20110-20210 The Elements of Economic Analysis: Honors I-II-III
- ECON 2000-20100-20200 The Elements of Economic Analysis I-II-III

**One three-quarter empirical methods sequence:**

- MATH 19620 Linear Algebra (OR STAT 24300 Numerical Linear Algebra OR MATH 20250 Abstract Linear Algebra OR MATH 20700 Honors Analysis in R^n I)
- STAT 23400 Statistical Models and Methods (OR STAT 24400 Statistical Theory and Methods I OR STAT 24410 Statistical Theory and Methods Ia)
- ECON 21020 Econometrics (OR ECON 21030 Econometrics - Honors)

**Total Units**

800

The specialization in data science is designed to begin after completion of the core sequence and the empirical methods sequence. Students pursuing the specialization in data science are not required to complete ECON 23950 Economic Policy Analysis. Instead, they must complete basic training in computer science and at least two data science courses in the Department of Economics:

- CMSC 14200 Introduction to Computer Science II
- Two chosen from:
  - ECON 21300 Data Construction and Interpretation in Economic Applications
  - ECMA 31320 Applications of Econometric and Data Science Methods
  - ECMA 31330 Econometrics and Machine Learning
  - ECMA 31340 Big Data Tools in Economics
  - ECMA 31350 Machine Learning for Economists
  - ECMA 38010 Empirical Industrial Organization

**Total Units**

300

Students pursuing the specialization in data science must also complete two electives drawn from the following sets of courses:

- At most one of:
  - ECON 21110 Applied Microeconometrics
  - ECON 21150 Topics in Applied Econometrics
ECON 21031 Econometrics II-Honors
ECMA 31000 Introduction to Empirical Analysis
ECMA 31100 Introduction to Empirical Analysis II
ECMA 31130 Topics in Microeconometrics
At most one of:
ECON 21200 Time Series Econometrics
STAT 26100 Time Dependent Data
BUSN 20820 Financial Econometrics
or BUSN 41203 Financial Econometrics
ECON 21410 Computational Methods in Economics
ECON 23040 Cryptocurrencies
STAT 27400 Nonparametric Inference
STAT 27725 Machine Learning

Students who have entered the specialization in data science but no longer wish to pursue it must complete ECON 23950 Economic Policy Analysis and the necessary electives to satisfy the requirements of the standard track BA in economics. All economics courses (ECON and ECMA courses) completed in the pursuit of the specialization in data science will count toward the degree requirements of the standard track BA in economics.

Summary of Requirements
For a summary of requirements for the BA in economics with specialization in data science, see below.

**SUMMARIES OF REQUIREMENTS**
- BA in Economics, Track A: Three-Quarter Empirical Methods Sequence
- BA in Economics, Track B: Two-Quarter Empirical Methods Sequence
- BA in Economics with Specialization in Business Economics
- BA in Economics with Specialization in Data Science

Summary of Requirements: BA in Economics, Track A: Three-Quarter Empirical Methods Sequence

**GENERAL EDUCATION**

One of the following:

<table>
<thead>
<tr>
<th>General Education Course</th>
<th>Units</th>
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<tr>
<td>MATH 13100-13200</td>
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<td>Calculus I-II</td>
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<td>MATH 16100-16200</td>
<td>Honors Calculus I-II</td>
</tr>
<tr>
<td>MATH 16110-16210</td>
<td>Honors Calculus I-II (IBL)</td>
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Total Units: 200

**MAJOR**

One of the following:

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<th>Major Course</th>
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<td>Honors Calculus III (IBL)</td>
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</table>

One of the following:

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<tr>
<th>Major Course</th>
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<tbody>
<tr>
<td>ECON 20000-20100-20200</td>
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<td>ECON 20010-20110-20210</td>
<td>The Elements of Economic Analysis: Honors I-II-III</td>
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<tr>
<td>MATH 15250</td>
<td>Mathematical Methods for Economic Analysis</td>
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<tr>
<td>or MATH 20400</td>
<td>Analysis in Rn II</td>
</tr>
<tr>
<td>or MATH 20410</td>
<td>Analysis in Rn II (accelerated)</td>
</tr>
<tr>
<td>or MATH 20800</td>
<td>Honors Analysis in Rn II</td>
</tr>
<tr>
<td>MATH 19620</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>or MATH 20250</td>
<td>Abstract Linear Algebra</td>
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<tr>
<td>or STAT 24300</td>
<td>Numerical Linear Algebra</td>
</tr>
<tr>
<td>or MATH 20700</td>
<td>Honors Analysis in Rn I</td>
</tr>
<tr>
<td>STAT 23400</td>
<td>Statistical Models and Methods</td>
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</table>

100
or STAT 24400  Statistical Theory and Methods I
or STAT 24410  Statistical Theory and Methods Ia

ECON 21020  Econometrics  100
or ECON 21030  Econometrics - Honors

ECON 23950  Economic Policy Analysis  100
or ECON 23200  Topics in Macroeconomics
or ECMA 33220  Introduction to Advanced Macroeconomic Analysis
or ECMA 33330  Introduction to Dynamic Economic Modeling

Four electives +  400

Total Units  1300

* Credit may be granted by examination and completion of a higher level proof-based mathematics course (MATH 15910 or MATH 20250 or higher).

** Students taking the MATH 15000s calculus sequence must complete MATH 15250 prior to enrollment in ECON 20000 or ECON 20010. Students taking MATH 13000s calculus sequence must complete MATH 13300 prior to enrollment in ECON 20000/20010 and may take MATH 15250 concurrently with ECON 20000/20010.

+ These courses must include at least two economics courses numbered higher than ECON 20210 and must follow guidelines in the preceding Electives section. Advanced undergraduate students may use economics master's-level (ECMA) courses to satisfy the major elective requirements. (Note: ECON 10200 may be used to fulfill one economics elective requirement for students who matriculated in 2016–17 or later.)

Summary of Requirements: BA in Economics, Track B: Two-Quarter Empirical Methods Sequence

GENERAL EDUCATION
One of the following:  200

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MATH 13100-13200</td>
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<td>MATH 16100-16200</td>
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<tr>
<td>MATH 16110-16210</td>
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Total Units  200

MAJOR
One of the following:  100

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<th>Course Title</th>
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One of the following:  300

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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECON 20000-20100-20200</td>
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<tr>
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<td>The Elements of Economic Analysis: Honors I-II-III</td>
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<tr>
<td>MATH 15250</td>
<td>Mathematical Methods for Economic Analysis</td>
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<tr>
<td>or MATH 20400</td>
<td>Analysis in Rn II</td>
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<tr>
<td>or MATH 20410</td>
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<td>ECON 21010</td>
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<td>Introduction to Advanced Macroeconomic Analysis</td>
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<tr>
<td>or ECMA 33330</td>
<td>Introduction to Dynamic Economic Modeling</td>
</tr>
</tbody>
</table>

Five electives +  500

Total Units  1300
Credit may be granted by examination and completion of a higher level proof-based mathematics course (MATH 15910 or MATH 20250 or higher).

Students taking the MATH 15000s calculus sequence must complete MATH 15250 prior to enrollment in ECON 20000 or ECON 20010. Students taking MATH 13000s calculus sequence must complete MATH 13300 prior to enrollment in ECON 20000/20010 and may take MATH 15250 concurrently with ECON 20000/20010.

These courses must include at least three economics courses numbered higher than ECON 20210 and must follow guidelines in the preceding Electives section. Advanced undergraduate students may use economics master's-level (ECMA) courses to satisfy the major elective requirements. For students who matriculated in 2016–17 or later, ECON 10200 may be used to fulfill one economics elective requirement.

Summary of Requirements: BA in Economics with Specialization in Business Economics

GENERAL EDUCATION

Any course or sequence of courses that fulfills the general education requirement in the mathematical sciences

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<tr>
<td>ECON 10000</td>
<td>Principles of Microeconomics 100</td>
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<td>or ECON 20010</td>
<td>The Elements of Economic Analysis I Honors</td>
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<td>ECON 10200</td>
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<td>or ECON 20210</td>
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One Foundations of Business Economics course chosen from:

| BUSN 20100 | Financial Accounting 100 |
| BUSN 20330 | Building the New Venture |
| BUSN 20400 | Investments |
| BUSN 20410 | Corporation Finance |
| BUSN 20702 | Managerial Decision Making |
| BUSN 20600 | Marketing Management |
| BUSN 20500 | Operations Management |
| BUSN 20800 | Big Data |
| BUSN 20900 | Competitive Strategy |

One Microeconomic Methods course chosen from:

| ECON 10700 | Introductory Game Theory 5 |
| or ECON 20700 | Game Theory and Economic Applications |
| ECON 11700 | Introduction to Behavioral and Experimental Economics 8 |
| or ECON 21800 | Experimental Economics |
| ECON 15010 | Investments: From Economics to Finance |
| ECON 19200 | Introduction to Issues and Methods in Microeconomics |
| ECON 20100 | The Elements of Economic Analysis II |
| or ECON 20110 | The Elements of Economic Analysis II Honors |

One Macroeconomic Methods course chosen from:

| ECON 13000 | Introduction to Money and Banking |
| or ECON 23000 | Money and Banking |
| ECON 13200 | Introduction to Macroeconomic Crises |
| ECON 13300 | Introduction to the Macroeconomics of Monetary and Fiscal Policy |
| ECON 16020 | Introduction to Public Sector Economics |
| ECON 17100 | Introduction to International Trade |
| or ECON 27000 | International Economics |
| ECON 19300 | Introduction to Issues and Methods in Macroeconomics |
| ECON 23950 | Economic Policy Analysis 5 |

| STAT 22000 | Statistical Methods and Applications 100 |
| or ECON 11010 | Introduction to Statistical Methods in Economics |
| or ECON 21010 | Statistical Methods in Economics |
| or STAT 23400 | Statistical Models and Methods |
### Summary of Requirements: BA in Economics with Specialization in Data Science

**GENERAL EDUCATION**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tr>
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<td>MATH 15100-15200</td>
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**MAJOR**

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<th>Course Code</th>
<th>Course Title</th>
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<td>or MATH 20400</td>
<td>Analysis in Rn II</td>
<td>100</td>
</tr>
<tr>
<td>or MATH 20410</td>
<td>Analysis in Rn II (accelerated)</td>
<td>100</td>
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<tr>
<td>or MATH 20800</td>
<td>Honors Analysis in Rn II</td>
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<tr>
<th>Course Code</th>
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<tr>
<td>ECON 20000-20100-20200</td>
<td>The Elements of Economic Analysis I-II-III</td>
<td>300</td>
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<tr>
<td>ECON 20010-20110-20210</td>
<td>The Elements of Economic Analysis: Honors I-II-III</td>
<td>300</td>
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<tr>
<td>MATH 19620</td>
<td>Linear Algebra</td>
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<td>or STAT 24300</td>
<td>Numerical Linear Algebra</td>
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<tr>
<td>or MATH 20250</td>
<td>Abstract Linear Algebra</td>
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<tr>
<td>or MATH 20700</td>
<td>Honors Analysis in Rn I</td>
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<tr>
<td>STAT 23400</td>
<td>Statistical Models and Methods</td>
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<tr>
<td>or STAT 24400</td>
<td>Statistical Theory and Methods I</td>
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<tr>
<td>or STAT 24410</td>
<td>Statistical Theory and Methods Ia</td>
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<td>ECON 21020</td>
<td>Econometrics</td>
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<tr>
<td>or ECON 21030</td>
<td>Econometrics - Honors</td>
<td>100</td>
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Note that BUSN 2XXXX-level (undergraduate-only) versions of these courses will follow some College policies regarding registration, scheduling, grading, etc. The BUSN 3XXXX-level versions will be subject to Chicago Booth academic and administrative policies. Consult the Chicago Booth website (https://www.chicagobooth.edu/programs/taking-courses-at-booth/faq/#beecf17b5e304bae93c50f4f595c27d6) for details.
Two Data Science courses chosen from:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECON 21300</td>
<td>Data Construction and Interpretation in Economic Applications</td>
</tr>
<tr>
<td>ECMA 31320</td>
<td>Applications of Econometric and Data Science Methods</td>
</tr>
<tr>
<td>ECMA 31330</td>
<td>Econometrics and Machine Learning</td>
</tr>
<tr>
<td>ECMA 31340</td>
<td>Big Data Tools in Economics</td>
</tr>
<tr>
<td>ECMA 31350</td>
<td>Machine Learning for Economists</td>
</tr>
<tr>
<td>ECMA 38010</td>
<td>Empirical Industrial Organization</td>
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Two Electives:

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<th>Course Code</th>
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<tbody>
<tr>
<td>ECON 21110</td>
<td>Applied Microeconomics</td>
</tr>
<tr>
<td>ECMA 31000</td>
<td>Introduction to Empirical Analysis I</td>
</tr>
<tr>
<td>ECMA 31100</td>
<td>Introduction to Empirical Analysis II</td>
</tr>
<tr>
<td>ECON 21200</td>
<td>Time Series Analysis</td>
</tr>
<tr>
<td>STAT 26100</td>
<td>Time Dependent Data</td>
</tr>
<tr>
<td>BUSN 20820</td>
<td>Financial Econometrics (or BUSN 41203 Financial Econometrics)</td>
</tr>
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<td>ECON 21410</td>
<td>Computational Methods in Economics</td>
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<tr>
<td>ECON 23040</td>
<td>Cryptocurrencies</td>
</tr>
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<td>STAT 27400</td>
<td>Nonparametric Inference</td>
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<tr>
<td>STAT 27725</td>
<td>Machine Learning</td>
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Total Units: 1300

* Credit may be granted by examination and completion of a higher level proof-based mathematics course (MATH 15910 or MATH 20250 or higher).

**GRADING**

Successful completion of the economics major requires both a major GPA of 2.0 or higher and a minimum grade of C– in all courses counted for the major program. In addition, students majoring in economics must receive quality grades in all courses required as part of the major. Non-majors may take economics courses on a P/F basis; only grades of C– or higher constitute passing work.

**HONORS**

To be considered for honors in economics, students must meet the following requirements: (1) a GPA of 3.5 or higher in the major and a GPA of 3.2 or higher overall, (2) participation in the honors workshop and sole authorship of an independent research paper on a topic in economics, and (3) a faculty sponsor’s letter evaluating this independent research paper. For award of honors, the project must receive a grade of A or A–. At the beginning of the student’s fourth year, the economics honors committee must have a letter from an economics faculty sponsor expressing willingness to oversee the student’s writing of an independent research paper and recommending the student be admitted into the honors workshop program. Honors papers should be outgrowths of economics electives or research assistant work for the faculty sponsor.

Participation in the ECON 29800 Undergraduate Honors Workshop is mandatory throughout the year. Upon completion of the paper in the Spring Quarter, the student will then be retroactively registered for the course in the fourth-year quarter of the student’s choosing. Plan for this retroactive registration with your College adviser.

The research paper, a transcript, and a recommendation letter from the faculty sponsor evaluating the independent research paper must be submitted to the undergraduate economics program office for consideration by the economics honors committee no later than the end of fourth week of the quarter in which the student plans to graduate. Students wishing to qualify for honors should (1) engage in preparatory course work in the area of interest no later than Spring Quarter of their third year and (2) consult with the program advisers no later than Winter Quarter of their third year.

This program may accept a BA paper or project used to satisfy the same requirement in another major if certain conditions are met and with the consent of the other program chair. Approval from both program chairs is required. Students should consult with the chairs by the earliest BA proposal deadline (or by the end of third year, when neither program publishes a deadline). A consent form, to be signed by both chairs, is available from the College adviser. It must be completed and returned to the College adviser by the end of Autumn Quarter of the student’s year of graduation.

**PREPARATION FOR PHD PROGRAMS IN ECONOMICS**

Students preparing to pursue a PhD program in economics should complete advanced course work in economics, mathematics, statistics, and computer science. The real analysis sequence offered by the Mathematics Department, MATH 20300-20400-20500 Analysis in Rn I-II-III (or its honors variant MATH 20700-20800-20900 Honors Analysis in Rn I-II-III) contains material that is particularly important for economics graduate school. Students who used MATH 13300 Elementary Functions and Calculus III or MATH 15300 Calculus III to fulfill the calculus requirement will need to take MATH 15910 Introduction to Proofs in Analysis to transition into the
real analysis sequence. Completion of this course work allows students to participate in higher level electives that may also be helpful for their chosen path of study in graduate school.

Advanced economics undergraduates are encouraged to take advanced-level economics and economics master's-level (ECMA) courses according to their research interests. For more information, consult with juliew@uchicago.edu.

Completion of either STAT 24400 Statistical Theory and Methods I or STAT 24410 Statistical Theory and Methods Ia and either MATH 20250 Abstract Linear Algebra or STAT 24300 Numerical Linear Algebra will allow students to continue their training in statistics and econometrics at an advanced level.

Increasingly, graduate programs expect students to have sophisticated programming skills. Completion of CMSC 14100 Introduction to Computer Science I and CMSC 14200 Introduction to Computer Science II is strongly encouraged.

In addition, students who are interested in pursuing graduate study are encouraged to take appropriate courses from other departments in the social sciences to obtain a well-rounded perspective of their areas of interest.

Students are encouraged to seek research assistant jobs and may self-subscribe to the Research Assistant Jobs (https://lists.uchicago.edu/web/info/chicago_economics-researchasst/) listhost to receive updates on job postings.

Provisional and early final grades are not given for economics PhD courses. Economics graduate courses should not be taken in the student's graduating quarter unless the student will have completed all forty-two credits required for graduation, not counting the economics graduate course, and all requirements for all majors.

It is important that such students consult early with one of the directors of the undergraduate program to design a plan of course work and research. Contact juliew@uchicago.edu for appointments.

APPLICATION TO BA/MA PROGRAMS

In order to receive approval to apply for a BA/MA program, students intending to complete the major in economics must submit the following to the program Co-Directors: the Approval to Apply for BA/MA Program form; a copy of their transcript; a full, tentative course plan for their third year and BA/MA year; a brief description of the field and topic of their MA thesis; and a brief description of their research experience.

Students who have not yet completed all the requirements of the economics major at the beginning of their fourth year must complete the remaining courses in compliance with the rules of the major as stipulated in the College Catalog published in the year of their matriculation. BA/MA students may use ECMA courses (ECMA 3xxx or higher) or graduate-level courses in economics (ECON 3xxx or higher) to satisfy requirements of the undergraduate degree. Graduate courses in other departments may also be used subject to the rules stipulated in the College Catalog. These courses require a petition that must be submitted prior to enrollment in the course.

Successful completion of the MA thesis may also be applied to the requirements for graduation with honors in the undergraduate major in economics as outlined in the College Catalog. The economics BA thesis is not a requirement for successful completion of the undergraduate economics major. If a student writes an MA thesis and wants to submit it for departmental honors, then the student must submit the full thesis by the deadline for the undergraduate honors thesis (typically Friday of week 5 of Spring Quarter). If, in addition, a BA/MA student wants to receive credit for ECON 29800 Undergraduate Honors Workshop, then the student must attend the workshop offered during Autumn Quarter and register for it per the rules set forth in the College Catalog.

ECONOMICS COURSES

ECON 10000. Principles of Microeconomics. 100 Units.

By way of economic theory, applications, and contemporary issues, this course treats (1) the behavior and decision making on the part of individuals, business firms, and governments; and (2) the function of costs, prices, incentives, and markets in the American economy. We discuss contemporary topics (e.g., distribution of income, the environment, education, sports, health care). This course is formerly known as Econ 19800: Introduction to Microeconomics. Students may substitute "Econ 20000: The Elements of Economic Analysis I" for this course in the business economics track.

ECON 10200. Principles of Macroeconomics. 100 Units.

By way of theory and public policy applications, this course covers current major domestic and international macroeconomic issues in the U.S. economy, including the determination of income and output, inflation, unemployment, and economic growth; money, banking, and the Federal Reserve System; federal spending, taxation, and deficits; and international trade, exchange rates, and the balance of payments. This course is formerly known as Econ 19900: Introduction to Macroeconomics. Students may substitute "Econ 20200: The Elements of Economic Analysis III" for this course in the business economics track.

ECON 10700. Introductory Game Theory. 100 Units.

How should one bid at an auction in order to win at the lowest possible hammer price? How do firms behave when they possess market power but also face competition? Why do companies engage in R&D races in order to release their new products sooner than their competitors? Why do the Republicans and the Democrats almost
always ended up choosing moderates as their party nominees in presidential races? To what extent can the veto power of presidents allow them to influence legislative outcomes? To answer these questions, we study Games of Strategies, and explore how lessons learned from such games can guide one's thinking in everyday strategic interactions.

ECON 11010. Introduction to Statistical Methods in Economics. 100 Units.
This course provides a solid foundation in probability and statistics for economists. We emphasize topics needed for further study of econometrics in ECON 11020. Topics TBD.

ECON 11020. Introduction to Econometrics. 100 Units.
The objective of this course is to introduce students to the practice of econometrics. The course will focus on the use of multiple regression as a tool to establish causal relations. The course emphasizes all steps of the process of empirical research: data collection, analysis, and presentation (both written and oral). Multiple examples of this process will be discussed and students will be expected to read and evaluate existing research. Students will apply the techniques discussed in class to a topic of their choosing. They will write a paper and present results to the class.

ECON 11050. Introduction to Empirical Methods for Social Science Research. 100 Units.
The goal of the course is to provide basic training in how to analyze and interpret quantitative data. The first part is a description of methods to graph and represent data sets. Emphasis will be given on methods that provide an intuitive sense of empirical relationships, using examples from discontinuity designs and difference-in-differences ("diff in diff"). Then, regression analysis will be covered, explaining how linear regression methods can be used to uncover rich and informative patterns from the data, including nonlinear relationships. Students will be introduced to causality and instrumental variables methods. The course will use a variety of empirical examples from published papers. Students will be asked to experiment with data sets and apply the methods by themselves.

ECON 11310. Big Data and Better Decisions. 100 Units.
This course will introduce students to advanced methods for data driven decision making with an emphasis on business applications. Students will learn how to build and interpret models that address two fundamental categories of business questions: (i) causal analysis and (ii) forecasting and prediction. The first portion of the course will cover experimental design, as well as non-experimental causal inference (e.g. matching, fixed effects, differences-in-differences, synthetic control). The second portion of the course will focus on machine learning topics including linear regularization, cross validation, tree models, random forests and boosting. The course will also explore cutting edge methods at the intersection of causal inference and machine learning. Heavy emphasis will be placed on discussion of real examples and business applications of these methodologies. The course work will include writing code and analyzing data in R to learn how these techniques are implemented in practice.

ECON 11600. Experimental Design. 100 Units.
The course equips students with the necessary skills to design and execute experiments effectively. In the first part of the course, students will learn why experiments are conducted and explore different types of experiments along with their respective advantages and disadvantages. Students will gain insights into choosing appropriate incentive structures and appropriate sample sizes. The course addresses critical issues, including internal and external validity, scalability concerns, and the risks of P-hacking and multiple hypothesis testing. Students will also learn about Institutional Review Board procedures. In the second part of the course, students will learn how to measure time preferences, risk preferences, subjective expectations, other-regarding preferences, competitiveness, and discrimination.

ECON 11700. Introduction to Behavioral and Experimental Economics. 100 Units.
This is an introductory course to experimental economics and on how to gather your own data using experimental methods to answer important economic questions. This methodology will be applied to learn the main topics in behavioral economics that leverages psychological insights to decision making and its effects on markets. Students may use this course to satisfy the microeconomics method requirement for the business economics specialization.

ECON 11800. Economics from an Experimental Perspective. 100 Units.
A growing field in which the University of Chicago has been a leader, experimental economics uses experimental methods - observing everyday interactions and decisions made by people either in the lab or in the field -- to explore economic questions ranging from how markets and other exchange systems work to what motivates people to make decisions about matters such as conserving environmental resources or donating to charitable causes. Students will participate in laboratory experiments and discuss the results, thereby learning the underlying economic principles and the economic questions that the experiments were designed to address. They will also engage in solving specific economic problems both individually and in a group.

ECON 12210. Economic History II: The Early Modern World, circa 1300-1800. 100 Units.
This course both describes preindustrial economic life and weighs the models used to explain fundamental changes to it. We will begin by describing some of the basic structures that determined patterns of production, exchange, and consumption in a period of low and easily reversible growth. These include agricultural productivity, demographic constraints, modes of transportation, and the social structures that governed the distribution of what little surplus premodern societies produced. Turning to the sources of economic dynamism that may have contributed to later industrialization, we will first examine the growth of long-distance trade
networks starting in the late fourteenth century. How were traditional economies characterized by limited movement stimulated by the circulation of people, goods, and money from afar? We will then move to a discussion of the factors leading to (or frustrating) transformational patterns of economic growth: agricultural productivity, institutions, “proto-industrial” production in an era of limited urban growth, and changing norms of consumption. This course is part of the College Course Cluster program: Economic History, from Sumer to the Global World.
Equivalent Course(s): HIST 19402

ECON 12220. Economic History III: The Global Economy from Great Depression to Great Recession. 100 Units.
This is the third part in the economic history sequence. Topics include the second Industrial Revolution and the new imperialism, the Great Depression and World War II, the American postwar world economic order, communism, and third-world development; globalization, growth, inequality, and climate change; the great recession. This course is part of the College Course Cluster program: Economic History, from Sumer to the Global World.
Equivalent Course(s): HIST 29533, HIST 39533

ECON 12300. Character and Commerce: Practical Wisdom in Economic Life. 100 Units.
Most of us seek to be reasonably good people leading what we take to be successful and satisfying lives. There is a mountain of evidence suggesting that most of us fail to live up to our own standards. Worse, we often fail to mark our own failures in ways that could help us improve ourselves. The context in which we try to live good lives is shaped by the vicissitudes of the global economy. The global economy is obviously of interest to those of us studying economics or planning on careers in business. Aspiring entrepreneurs or corporate leaders have clear stakes in understanding practical wisdom in the economic sphere. But anyone who relies upon her pay - or someone else’s - to cover her living expenses has some interest in economic life. In this course, we will bring work in neo-Aristotelian ethics and neo-classical economics into conversation with empirical work from behavioral economics and behavioral ethics, to read, write, talk, and think about cultivating wisdom in our economic dealings. While our focus will be on business, the kinds of problems we will consider, and the ways of addressing these, occur in ordinary life more generally - at home, in academic settings, and in our efforts to participate in the daily production and reproduction of sound modes of social interaction. (A)
Equivalent Course(s): PHIL 24098

ECON 12410. Pathways in Economics. 100 Units.
This program introduces students to the approaches to economic research and experimentation that make UChicago a world leader in the field. Full-time lecturers in the Department of Economics teach classes on topics in macroeconomics, microeconomics, game theory, and field experiments, which are supplemented by guest lectures delivered by preeminent UChicago faculty in economics and other departments whose research applies the tools and insights of the field in new and exciting ways. Participants can apply what they hear about in lectures during small group discussion sections facilitated by a team of outstanding current UChicago students, as well as in labs and site visits to locations such as the Federal Reserve Bank of Chicago.

ECON 12411. Pathways in Economics C. 100 Units.
This program introduces students to the approaches to economic research and experimentation that make UChicago a world leader in the field. Full-time lecturers in the Department of Economics teach classes on topics in macroeconomics, microeconomics, game theory, and field experiments, which are supplemented by guest lectures delivered by preeminent UChicago faculty in economics and other departments whose research applies the tools and insights of the field in new and exciting ways. Participants can apply what they hear about in lectures during small group discussion sections facilitated by a team of outstanding current UChicago students, as well as in labs and site visits to locations such as the Federal Reserve Bank of Chicago.

ECON 12412. A Survey of Chicago Economics. 50 Units.
This two-week program will provide an introduction to UChicago-style, rigorous economics education; it is open only to approved visiting third-year students from Universidad Panamericana. Led by a team of full-time lecturers from the Department of Economics, this course will explore topics in four foundational areas: price theory, game theory, experimental economics, and macroeconomics. Participants will also develop skills that will prepare them for further graduate study or other professional pursuits, such as interviewing, networking, and academic and professional communications. Evening and weekend residential program activities will enable students to experience American life and culture and explore the vibrant city of Chicago. Throughout the program, students will have the opportunity to practice both academic and informal spoken English.

ECON 12413. A Survey of Chicago Economics and its Business Applications. 000 Units.
This two-week program will provide an introduction to UChicago-style, rigorous economics education, as well as its business applications. Fulltime lecturers in the Department of Economics will explore topics in four foundational areas: price theory, game theory, experimental economics, and macroeconomics. Evening and weekend residential program activities will enable students to experience American life and culture and explore the vibrant city of Chicago. Throughout the program, students will have the opportunity to practice both academic and informal spoken English.
ECON 13000. Introduction to Money and Banking. 100 Units.
The course focuses on monetary policy and central bank’s attempts to stabilize prices and promote maximum sustainable economic growth. Topics include the structure of the Federal Reserve, the conduct of monetary policy, the term structure of interest rates, risk valuation, management of banking, and financial crises.

ECON 13110. Household Finance: Theory and Applications. 100 Units.
This course will examine the choices households make about important financial decisions and how these individual choices can impact the aggregate economy. Each week, basic predictions from economic theory will be discussed and compared with empirical findings. Topics will include: asset market participation and household portfolio choice; human capital and student loans; housing and mortgages; retirement planning; credit card debt; payday loans; and the gig/sharing economy. Focus will also be placed on government policies affecting these topics, including so-called household financial engineering, the creation of Government Sponsored Enterprises (GSEs) like “Fannie” and “Freddie,” and regulatory agencies like the Consumer Financial Protection Bureau (CFPB). The course will provide an introduction to structural modeling for conducting policy counterfactuals. Assessment will be based on problem sets, a midterm and a final. These problem sets will require students to work in R, Stata or other statistical package of the student’s choice (with permission of instructor).
Equivalent Course(s): PBPL 28528

ECON 13200. Introduction to Macroeconomic Crises. 100 Units.
This course studies macroeconomic crises within the standard macroeconomic framework. The course introduces students to long run growth and business cycle fluctuations and analyzes recent events such as the 2008 financial crisis, Europe’s debt crisis, and the 2020 pandemic as distinct macroeconomic phenomena. In particular, we will cover areas including systemic risk in the banking sector, monetary and fiscal policy, sovereign default, labor market consequences and theories of labor determination and models of infection risk. We will also study methodological innovation in macroeconomics, i.e., how macroeconomists have adapted their theory and models to explain these particular episodes.

ECON 13300. Introduction to the Macroeconomics of Monetary and Fiscal Policy. 100 Units.
This course examines monetary and fiscal issues in the macroeconomy. The first part of the course will focus on long-run topics in monetary economics, such as the nature of a monetary economy, inflation, the quantity theory of money, and the welfare cost of inflation. The second part of the course will focus on the macroeconomic implications of government expenditure, supply side economics, the Laffer curve, and the Ricardian equivalence theorem. An effort will be made to tackle these issues within unified and simple dynamic frameworks.

ECON 13310. Introduction to Macroeconomic Analysis: A Data Driven Approach. 100 Units.
This course offers a comprehensive exploration of neoclassical macroeconomic models, designed for students who have previously studied the principles of microeconomics. The course is divided into five key modules: (i) economic growth and production, (ii) consumption and savings, (iii) government finances, (iv) money and the price level, and (v) unemployment. Throughout each module, we extensively utilize relevant data to enhance the understanding of theoretical concepts. By the end of the course, students will not only possess the ability to interpret macroeconomic news and articles but also analyze policies through a model-based framework.

ECON 14000. Introduction to Labor Economics. 100 Units.
This course is an introduction to labor economics with an emphasis on applied microeconomic theory and empirical analysis. Topics to be covered include: labor supply and demand, taxes and transfers, minimum wages, immigration, human capital, creativity over the lifecycle and unemployment. For each topic we will describe the basic economic framework used in the analysis, analyze associated cases of study and drawn conclusions about what we have learned. Most of the examples will be taken from U.S. labor data and special attention will be given to randomized trials and experimental methods to infer causality.

ECON 14010. Introduction to Intergenerational Mobility. 100 Units.
The gap between top income percentiles and bottom income percentiles has increased in many countries, including the US, over the last decades. Income distribution is placed back at the center of economics and has become a prominent part of media and policy discussions. Empirical findings suggest that there exists a positive correlation between inequality and immobility. To provide deeper insight in mechanisms underlying the latter phenomenon the course covers theories of persistent inequality and intergenerational mobility. Students in this course will learn about the fundamental theories of distributive justice, theory of measures of mobility and persistence, empirical evidence on intergenerational mobility, theories of intergenerational mobility. Assignments include regular class participation and several home assignments (in particular, students will be asked to choose 1 paper to master and to write an essay on it; there will be also offered sets of problems and practical questions).
Equivalent Course(s): PBPL 23420

ECON 14020. Labor Markets: A Global Perspective. 100 Units.
In this course we will explore standard models that form the core of labor economics including labor supply, labor demand, job search models, wage setting, discrimination, and migration. For each topic we will then examine empirical applications of these models with a focus on middle and low-income countries. We will discuss how these traditional models are useful, or not, in understanding labor market outcomes in these settings and how they can be expanded to better capture relevant features of labor markets outside high-income countries.
Equivalent Course(s): PBPL 25640
ECON 14200. Applied Price Theory: Individual and Family. 100 Units.
TBD

ECON 14270. Applied Price Theory: Individual and Family. 100 Units.
TBD

ECON 14520. Economics of Gender in International Contexts. 100 Units.
In this class, students will engage basic issues, conflicts, and innovative field research in economics of gender in international contexts. In particular, we will review theoretical foundations, data and methods of research, and a review of recent work in international research related to economics of gender. At the end of the course, you will have a suite of research approaches, topics, and methods, to investigate gender differences in a variety of economic outcomes and contexts.
Equivalent Course(s): GNSE 22520

ECON 14530. Gender and Policy. 100 Units.
This course seeks to familiarize undergraduate students with historic and current policy in the US and in other developed countries concerning various aspects of women's lives at work and in the home. We will begin by discussing the reasons for the rise in female labor force participation between the 50s and the 80s. We will discuss the role of male deployment in WWII, the role of technological change in both fertility planning and in the invention of household appliances, and the role of changes in the demand for skilled labor. With this backdrop in mind, we will discuss the historic development of maternity leave policies in many European countries and evaluate the impact of these developments on female labor force participation. We will then turn to understanding the relative stagnation in female advancement in the past twenty-five years. The focus of this portion of the course will be to summarize recent trends in female labor force participation.
Equivalent Course(s): PBPL 24520, GNSE 20109

ECON 14810. Evolution and Economics of Human Behavior. 100 Units.
This course explores how evolutionary biology and behavioral economics explain many different aspects of human behavior. Specific topics include evolutionary theory, natural and sexual selection, game theory, cost-benefit analyses of behavior from an evolutionary and a behavioral economics perspective, aggression, power and dominance, cooperation and competition, biological markets, parental investment, life history and risk-taking, love and mating, physical attractiveness and the market, emotion and motivation, sex and consumer behavior, cognitive biases in decision-making, and personality and psychopathology.
Equivalent Course(s): PSYC 27950, CHDV 37950, CHDV 27950, PSYC 37950

ECON 15010. Investments: From Economics to Finance. 100 Units.
This course studies finance and investments through the lens of economic equilibrium methods. We look at how the general equilibrium framework in economics gives rise to the factor pricing models in finance, the no-arbitrage framework in economics gives rise to the option pricing models in finance, and the Nash equilibrium framework in economics gives rise to the microstructure trading models in finance. Trillions of dollar worth of financial products ride on these financial models, and we trace the path from the basic models of equilibrium in economic theory to these applied models in finance that have found immense use in practice. The course combines a theoretical framework with applied analysis. Topics covered include: basics of general equilibrium with uncertainty, mean-variance utility, portfolio optimization, capital asset pricing model, no-arbitrage equilibrium, fundamental theorem of asset pricing, binomial option pricing, Black-Scholes-Merton options theory, Bayes Nash equilibrium, Kyle and Glosten-Milgrom models of trading.

ECON 15050. Introduction to Development Economics. 100 Units.
Global poverty is one of the fundamental problems facing humanity. In this course we will try to understand the economic lives of the global poor, why they are stuck in poverty, and what evidence exists on what works and what doesn't in the fight against poverty. We will take a primarily micro-economic perspective on poverty which focuses on individuals, households, markets, and governments. We will structure our investigation using economic models and statistical methods, and consider questions related to consumption, health, education, risk, credit, and savings. We will also study the role of government provision of services and politics in developing countries. We will end with taking a historical and big-picture perspective of development.
ECON 15510. An Introduction to Development Economics With a Focus on Data. 100 Units.
Why do some countries grow faster than others? Why do children in Vietnam learn twice as much as Peruvian children in a year despite their governments spending similar amounts on education? Why do farmers not adopt new technologies that generate higher yields? What is the most effective way to improve health and women’s empowerment in middle and low income countries? We will examine these questions by applying the tools of economics to the best available data. In addition to an introduction to development economics, students will get a grounding in different data analysis techniques and how they are applied in practice. They will learn how to critically evaluate data analysis and spot potential biases: is the outcome variable likely to be subject to reporting bias? is there potential selection bias or attrition bias? What techniques are best adapted to addressing these potential biases in the data? In the final part of the course we will cover the role of the International Financial Institutions (the IMF and World Bank) in international development. The course is designed for undergraduates with a strong interest in economics and data.

ECON 16200. Introduction to Public Sector Economics. 100 Units.
The course studies public policy issues in the world from both micro- and macroeconomic perspectives. Covered topics include tax, antitrust, and trade policies (micro) as well as fiscal and monetary policies (macro). International case studies will be discussed in comparison to the US experiences (e.g., industrial policies and development in Asia, exchange rate policies in Latin America, the currency union in Europe, and ECB’s monetary policy).

ECON 16510. Water: Economics, Policy and Society. 100 Units.
Water is inextricably linked to human society. While modern advances in technology and new economic and policy mechanisms have emerged to address water stressors from overconsumption, development pressures, land use changes and urbanization, challenges continue to evolve across the globe. These problems, while rooted in scarcity, continue to become more complex due to myriad human and natural forces. In addition to water quality impairments, droughts and water shortages persist, putting pressure on agricultural production and urban water use, while the increased frequency and severity of rainfall and tropical storms, already being experienced globally, are only projected to grow in intensity and duration under climate change. Students will explore water from the perspective of the social sciences and public policy, with attention on behavioral dimensions of water use and water conservation. Qualitative and quantitative approaches to examining how humans use and affect water will be considered, with particular applications to Chicago and the Great Lakes region.
Equivalent Course(s): CHST 21310, LLSO 21310, GLST 21310, CEGU 21310, ENST 21310, PBPL 21310

ECON 16520. Economics and Environmental Policy. 100 Units.
This course combines basic microeconomic theory and tools with contemporary environmental and resources issues and controversies to examine and analyze public policy decisions. Theoretical points include externalities, public goods, common-property resources, valuing resources, benefit/cost analysis, and risk assessment. Topics include pollution, global climate change, energy use and conservation, recycling and waste management, endangered species and biodiversity, nonrenewable resources, congestion, economic growth and the environment, and equity impacts of public policies.
Equivalent Course(s): CEGU 21800, ENST 21800

ECON 16530. Applied Research in Environment, Development and Health. 100 Units.
This course engages students in collaborative research on topics that connect the environment, health, agriculture and development. After identifying a shared theme, students will design and commence a plan of research with the goal of producing content including reading lists, research and policy briefs, data visualizations, maps, blog posts and web content, as well as creative media such as podcasts. Students will also apply their findings to programming surrounding the Frizzell Speaker and Learning Series for 2020-21 by identifying possible keynote speakers and curating other events. Students are strongly encouraged but not required to enroll in both the autumn and winter courses to gain the full benefit of a sustained research experience.
Equivalent Course(s): GEOG 21710, GLST 21700, ENST 21700, PBPL 21700

ECON 16540. Urban Spaces and Unnatural Disasters: Humans-Nature Connections in Cities. 100 Units.
A natural disaster is thought of an event or series of events caused by the Earth’s natural forces and processes. These include hurricanes, floods, droughts, wildfires, earthquakes, and other events provoked by the earth’s processes. But what about the outcomes of such disasters? How do social, economic and spatial conditions affect the impact of natural disasters on the population? What role do humans play in these events and the outcomes? How does human activity and public policy lead to or mitigate large one-time events like oil spills, as well as chronic conditions like deforestation, pollution, and climate change? Are humans part of the natural system in this context or is the human influence considered “unnatural”? This course explores the human relationship to such disasters, including humans as contributors to the severity and extent of such disasters through energy consumption, land use, public policy and other behaviors, and the response by humans to disasters including mitigation, adaptation, and policy formation and implementation. Students will explore how historic policies both created and mitigated environmental vulnerabilities, and how these risks are distributed across the population. Students will study the role of contemporary human behavior in outcomes related to the environment and natural resources through a series of seminal and current readings, and an independent yet collaborative research project using mixed methods from the social sciences.
Equivalent Course(s): GLST 21750, PBPL 21750, ENST 21750, CHST 21750, CEGU 21750
ECON 16710. Education and Economic Development. 100 Units.
This course covers policy issues related to education in developing contexts. We will analyze education policies and reforms, develop skills to be a critical consumer of relevant research on each topic, and examine implications of the findings to policy and practice. Topics include discrimination and inclusion in education, understanding factors that influence educational decisions, provision of basic needs in schools, teacher pay and incentives, education in emergency settings, and school choice. Equivalent Course(s): EDSO 28350, PBPL 28350

ECON 16950. Conflict: Root Causes, Consequences and Solutions for the Future. 100 Units.
The goals of this course are to introduce you to key concepts in the study of conflict, and to help you develop the analytical skills you need to understand and assess key arguments advanced in this arena. Drawing primarily on economics and political science, as well as psychology, we will seek to understand: Why do human beings engage in acts of violence? How can armed groups compel atrocities? How do we prevent cycles of violence, and aid countries recovering from war? Specifically: We will examine the role of economic shocks and ethnic divisions on civil war. We will also discern whether similar factors explain the rise of terrorism. In addition, we will study the consequences of conflict on socio-economic development, and examine the role of foreign aid and post-conflict reconciliation in helping countries recover from conflict. The class will examine these questions while focusing on analytical skills needed to understand cutting edge research in this area. Thus a major emphasis of the course is on learning how to think critically about empirical evidence, and learning the methods used in quantitative empirical analysis, such as fixed effects models, differences-in-differences research designs, and instrumental variables estimation. It is ideal for students who want to learn substantively about conflict while developing an understanding of the methodology used to produce key empirical findings. Equivalent Course(s): PBPL 28750, PLSC 28750

ECON 17100. Introduction to International Trade. 100 Units.
This course covers international economics with an emphasis on international trade. The basic theories of international trade are introduced and used to analyze welfare and distributional effects of international trade, government policies, and technology diffusion. In addition, this course also discusses the main empirical patterns of international trade and international investment.

ECON 17110. International Monetary Systems. 100 Units.
This course studies the principles of monetary policy across international markets, global banking markets, and optimum currency areas and their impact on and from business cycles and economic development. Students will be introduced to simplified theoretical models with which to analyze data, relevant empirical findings, and policy decisions. Practice is provided in understanding recent international economic events and current policy topics.

ECON 17700. Introduction to Health Economics. 100 Units.
This course will introduce students to the economics of health care provision and payment. We will use methods from microeconomics to investigate how different aspects of the health care system function and to assess the implications for different policies designed to improve that functioning. We will use economic tools and techniques from the sub-disciplines of information economics, industrial organization, labor economics, public economics, behavioral economics, and decision theory to think about these questions. The primary goals of the course will be to (i) master different economic techniques in the context of health care markets and (ii) learn about the specific institutional details and policies relevant to those markets.

ECON 17710. Health Care Markets and Regulation. 100 Units.
This course analyzes the economics of health care markets and the way regulations impact those markets. We will study the unique institutional arrangements found in the health care sector (primarily, though not exclusively, in the United States) and examine how market forces manifest themselves in this setting. We will consider the behavior of health care providers, insurers’ roles both as intermediaries and risk managers, patients’ health care demand, and geographic differences in medicine. The study of government regulations, including their theoretical and empirical impacts on health care markets, will be integrated throughout these topics. Equivalent Course(s): PBPL 2835, PPHA 37820

ECON 18010. Introduction to Managerial Microeconomics. 100 Units.
This course presents several classic microeconomic models applicable in business contexts. The topics covered include self-selection, commitment, product differentiation, matching, and mechanism design, among others. The theoretical insights of each model will be analyzed. Real-world applicability is discussed using practical examples. Students are required to write short papers applying the models presented in the course to real-world situations in the context of business.

ECON 18020. Introduction to Applied Empirical Industrial Organization. 100 Units.
In this course, students will learn how to apply techniques and models developed in industrial organization and law and economics to important questions that arise in litigation and government regulation. We will be guided and informed by pure theory underlying industrial organization and implement it in a world of partial information, incomplete data, and even contradictory data, among other complexities. Students will learn how to develop inferences by applying the models to real world cases and data - ie, extracting the most information possible from partial, imperfect data, frequently with missing values or poorly-measured data points. These fact patterns will not always result in an incontrovertible answer. Thus, students will be expected to identify
and express the "best argument for" and "best argument against" the questions posed to them. This means that students will be expected to (i) see theory as a guideline to assess the relevant facts, circumstances, and data, (ii) reach a view, (iii) succinctly express that view in writing and acknowledge and address contrary theory and empirical results. Students will also see actual expert reports and/or white papers that have been prepared in actual disputes and investigations. Part of the grade will be based on an "expert report" written by the students in small teams.

ECON 19000. Economics for Everyone: Micro. 100 Units.
The field of economics has generated a powerful set of insights which have fundamentally shaped the modern world. Because modern economics puts such a heavy stress on mathematical rigor, the most interesting economic ideas often get pushed to the background. In this course, we will explore these big economic ideas, without the math. Our goal is to make the beauty and power of economic thinking available to everyone. We will discuss what it means to think like an economist, how you can use economic thinking to make the world a better place (or to take advantage of your friends and enemies, if you prefer), and also how sometimes thinking like an economist can get you into trouble.

ECON 19100. Economics for Everyone: Macro. 100 Units.
This course explores the big ideas in macroeconomics in a way that is enjoyable and accessible, with minimal reliance on mathematics. The goal is to provide an introduction to macroeconomic issues for people who have never before studied macroeconomics (and who might never study it again), so that they can understand and contribute to ongoing discussions in the news and on social media. We will demystify some of the major macroeconomic questions of our time: Why is there unemployment? Why are some countries poor? What’s the big deal about government debt? How high should we set taxes? What gives money and stocks their value? What does the Fed do? And why did all those economists win Nobel Prizes? We will show the fun, interesting, and strange sides of macroeconomics.

ECON 19200. Introduction to Issues and Methods in Microeconomics. 100 Units.
Microeconomics is the study of how agents make optimal choices when facing constraints. The course will start by developing the "Economic Approach" as the basic tool for analysis in economics. We will continue with a model of causal inference, and link it with concepts students have learned in the econometrics course. Then, we introduce the use of experiments as an alternative methodology for the researchers to gather their own data. Finally, we cover some major topics in behavioral economics.

ECON 19300. Introduction to Issues and Methods in Macroeconomics. 100 Units.
We will develop basic tools and methods in economics and study issues in macroeconomics and international trade and finance. The topics we cover include both contemporary and classical issues such as tax incidence and distortions, optimal taxation, inflation, monetary policy, patterns and benefits of trade, and exchange rate determination. The objective of the course is to train students with analytical tools in macroeconomics so that they can understand, analyze, and evaluate various policies and policy proposals. To make the subject matter relevant and practical, students are strongly encouraged to read the Wall Street Journal and the Economist regularly to keep up with current events and controversies.

ECON 19800. Introduction to Microeconomics. 100 Units.
By way of economic theory, applications, and contemporary issues, this course covers (1) the behavior and decision making on the part of individuals, business firms, and governments; and (2) the function of costs, prices, incentives, and markets in the American economy. We discuss contemporary topics (e.g., distribution of income, the environment, education, sports, health care).

ECON 19900. Introduction to Macroeconomics. 100 Units.
By way of theory and public policy applications, this course covers current major domestic and international macroeconomic issues in the U.S. economy, including the determination of income and output, inflation, unemployment, and economic growth; money, banking, and the Federal Reserve System; federal spending, taxation, and deficits; and international trade, exchange rates, and the balance of payments.

ECON 20000-20100-20200-20300. The Elements of Economic Analysis I-II-III-IV.

ECON 20000. The Elements of Economic Analysis I. 100 Units.
This course develops the economic theory of consumer choice. This theory characterizes optimal choices for consumers given their incomes and preferences, as well as the relative prices of different goods. This course develops tools for analyzing how these optimal choices change when relative prices and consumer incomes change. Finally, this course presents several measures of consumer welfare. Students learn how to evaluate the impact of taxes and subsidies using these measures. Completion of ECON 10000 (or ECON 19800) is strongly recommended of students without a prior microeconomics course.

ECON 20100. The Elements of Economic Analysis II. 100 Units.
This course is a continuation of ECON 20000. The first part of this course discusses markets with one or a few suppliers. The second part focuses on demand and supply for factors of production and the distribution of income in the economy. This course also includes some elementary general equilibrium theory and welfare economics.
ECON 20200. The Elements of Economic Analysis III. 100 Units.
As an introduction to macroeconomic theory and policy, this course covers the determination of aggregate demand (i.e., consumption, investment, the demand for money); aggregate supply; and the interaction between aggregate demand and supply. We also discuss economic growth, business cycle, inflation and money. Completion of ECON 19900 is strongly recommended of students without a prior macroeconomics course.

ECON 20300. Elements of Economic Analysis IV. 100 Units.
This is a course in money and banking, monetary theories, the determinants of the supply and demand for money, the operation of the banking system, monetary policies, financial markets, and portfolio choice.

ECON 20010-20110-20210. The Elements of Economic Analysis: Honors I-II-III.
The Elements of Economic Analysis: Honors I-II-III

ECON 20010. The Elements of Economic Analysis I Honors. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. This course develops the economic theory of consumer choice. This theory characterizes optimal choices for consumers given their incomes and preferences, as well as the relative prices of different goods. This course develops tools for analyzing how these optimal choices change when relative prices and consumer incomes change. Finally, this course presents several measures of consumer welfare. Students learn how to evaluate the impact of taxes and subsidies using these measures. Completion of ECON 10000 (or ECON 19800) is strongly recommended of students without a prior microeconomics course.

ECON 20110. The Elements of Economic Analysis II Honors. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. This course is a continuation of ECON 20000/20010. The first part of this course discusses markets with one or a few suppliers. The second part focuses on demand and supply for factors of production and the distribution of income in the economy. This course also includes some elementary general equilibrium theory of welfare economics.

ECON 20210. The Elements of Economic Analysis III Honors. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. As an introduction to macroeconomic theory and policy, this course covers the determination of aggregate demand (i.e., consumption, investment, the demand for money); aggregate supply; and the interaction between aggregate demand and supply. We also discuss economic growth, business cycle, inflation and money. Completion of ECON 10200 (or ECON 19900) is strongly recommended of students without a prior macroeconomics course.

ECON 20310. Elements of Economics Analysis 4: HONORS. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. This is a course in money and banking, monetary theories, the determinants of the supply and demand for money, the operation of the banking system, monetary policies, financial markets, and portfolio choice. Prerequisite(s): ECON 20200 or 20210

ECON 20510. Political Economy. 100 Units.
Political Economy bridges the gap between economics and politics by showing how governments and political institutions are composed of people who respond to incentives and whose behavior and choices can be studied through the lens of economics. In this class, we will open a refresher on microeconomics and an introduction to the toolkit of political economy, making sure that the necessary building blocks are in place before building up from the level of the individual and the firm to show how a political-economic equilibrium can be achieved. The final goal is to demonstrate that economic and political issues alike can be studied within the same general framework of analysis.

ECON 20520. Formal Models of Political Economics. 100 Units.
Why do the Republicans and the Democrats almost always ended up choosing moderates as their party nominees in presidential races? How do "checks and balances" such as a legislative committee's power to set the agenda or a president's power to veto a bill affect policy outcomes? What leads to coalition building in a legislature and how does it affect the result of legislative bargaining? When can a legislature optimally delegate its power to a bureaucratic agency who has its own interests and agenda? To answer questions like these, we study formal models of political economics. Such models examine explicitly the incentives of participants in political processes and generate predictions of their behavior based on such incentives and any confounding strategic considerations. Our approach is largely game theoretical. Familiarity with fundamental game theoretical ideas like the strategic and extensive games, the Nash Equilibrium, and the Subgame Perfect Equilibrium is essential and assumed.

ECON 20700. Game Theory and Economic Applications. 100 Units.
This course introduces the basic ideas and applications of game theory. Topics include models of games in extensive and strategic form, equilibria with randomization, signaling and beliefs, reputation in repeated games, bargaining games, investment hold-up problems, and mediation and incentive constraints.
ECON 21040. Analysis of Collective Decision-Making. 100 Units.
This course develops the theory of collective choice by groups of individuals who may have diverse preferences. We study how, and to what extent, preferences can be aggregated and the extent to which voting systems and elections succeed in aggregating information and preferences. Finally we examine how the design of institutions impacts policy outcomes and why the electoral system may produce suboptimal results.

ECON 20770. Decision and Strategy. 100 Units.
This course provides a formal introduction to game theory with applications in economics. We will study models of how individuals make decisions, and how those decisions are shaped by strategic concerns and uncertainty about the world. The topics will include the theory of individual choice, games of complete and incomplete information, and equilibrium concepts such as Nash equilibrium. The applications will include oligopoly, auctions, and bargaining. The course is appropriate for advanced undergraduates who are interested in a rigorous mathematical approach to understanding human behavior.
Equivalent Course(s): ECMA 30780

ECON 20900. Econometrics: Honors. 100 Units.
The topics are essentially the same as those covered in ECON 21000, but this foundations course in econometrics gives a more systematic introduction to the application of statistical theory to economic applications. This course is intended for students who are planning to study economics at the graduate level.

ECON 21000. Econometrics A. 100 Units.
Required of students who are majoring in economics; those students are encouraged to meet this requirement by the end of their third year. This course covers the single and multiple linear regression model, the associated distribution theory, and testing procedures; corrections for heteroskedastcity, autocorrelation, and simultaneous equations; and other extensions as time permits. Students also apply the techniques to a variety of data sets using PCs. Prerequisite(s): ECON 20100, STAT 23400, and MATH 19620 (or MATH 20000 or STAT 24300 or MATH 20250)

ECON 21010. Statistical Methods in Economics. 100 Units.
This course provides a solid foundation in probability and statistics for economists. We emphasize topics needed for further study of econometrics in ECON 21020. Topics include elements of probability theory, sampling theory, estimation, hypothesis testing, and an introduction to linear algebra.

ECON 21020. Econometrics. 100 Units.
Required of students who are majoring in economics; those students are encouraged to meet this requirement by the end of their third year. This course covers the single and multiple linear regression model, the associated distribution theory, and testing procedures; corrections for heteroskedastcity, autocorrelation, and simultaneous equations; and other extensions as time permits. Students also apply the techniques to a variety of data sets using PCs.

ECON 21030. Econometrics - Honors. 100 Units.
The topics are essentially the same as those covered in ECON 21020, but this foundations course in econometrics gives a more systematic introduction to the application of statistical theory to economic applications. This course is intended for students who are planning to study economics at the graduate level.

ECON 21031. Econometrics II-Honors. 100 Units.
This course is a continuation of ECON 21030. The topics covered include additional applications of linear regression to descriptive and causal inference. Other topics may include nonlinear models, panel data, quantile regression, time series, the bootstrap, and nonparametric regression. This course is intended for students who are planning to study economics at the graduate level.

ECON 21050. Empirical Methods for Social Science Research. 100 Units.
The goal of the course is to provide basic training in how to analyze and interpret quantitative data. The first part is a description of methods to graph and represent data sets. Emphasis will be given on methods that provide an intuitive sense of empirical relationships, using examples from discontinuity designs and difference-in-differences (“diff in diff”). Then, regression analysis will be covered, explaining how linear regression methods can be used to uncover rich and informative patterns from the data, including nonlinear relationships. Students will be introduced to causality and instrumental variables methods. The course will use a variety of empirical examples from published papers. Students will be asked to experiment with data sets and apply the methods by themselves.

ECON 21100. Econometric B. 100 Units.
ECON 21100 or 21110 or 21130 or 21150 may be used as an economics elective, but only one may be used toward degree requirements. This course provides students with a basic understanding of how econometrics, economic
theory, and knowledge of institutions can be used to draw credible inferences on economic relationships. Topics include multivariate linear regression, causal inference, omitted variables bias, fixed and random effects models, simultaneous equation models, the propensity score, and discrete choice models. Students have the opportunity to apply these techniques to empirical questions in industrial organization, as well as in environmental, labor, and public economics.

ECON 21110. Applied Microeconometrics. 100 Units.
This course will cover a broad set of applications in labor economics, public economics, industrial organization, economics of education, environmental economics, and development economics. There will be a strong focus on how economic theory, institutional details, and experiments can be used to draw causal inferences on economic relationships. There will be emphasis on applying a number of commonly used microeconometric methods to economic data; including the linear regression model, fixed and random effects models, instrumental variables, and discrete choice models. When interpreting the empirical results, we will also discuss the importance of omitted variables bias and measurement error.

ECON 21150. Topics in Applied Econometrics. 100 Units.
This course builds on the theoretical foundations set in Econ 21030 and explores more advanced topics pertinent to modern economic applications. While the course content may change from year to year according to student and instructor interests, some potential topics are panel data methods, treatment effects/causal inference, discrete choice/limited dependent variable models, demand estimation, and selected topics in economic applications of supervised and unsupervised learning algorithms. The course will involve analytically and computationally intensive assignments and a significant project component.

ECON 21200. Time Series Econometrics. 100 Units.
This course focuses on theory, and covers a broad range of topics, both mathematical and statistical, on stationary time series models in time and frequency domains. The models include ARMA, VAR, ARCH/GARCH and their variants. It also covers nonstationary time series models with unit roots and cointegration, and the theories and methodologies to estimate and test them statistically.

ECON 21300. Data Construction and Interpretation in Economic Applications. 100 Units.
In this course we will explore the process of extracting insights from real-world data. What can one learn from a particular data set? How do you know what sets of tools will be “right” for the job? How can you increase your degree of confidence that the inferences you are drawing are correct? How can you best communicate the insights you glean from the data? Unlike standard econometrics courses, this class emphasizes hands-on work with actual data sets rather than the development of sophisticated tools and techniques (which are also useful, you just won’t learn them here!).

ECON 21410. Computational Methods in Economics. 100 Units.
This course introduces the empirical and computational techniques necessary for numerical estimation and simulation in economics. Through examples in economics, the course covers topics such as optimization, function approximation, and Monte Carlo techniques. Emphasis will be placed on developing effective programming and research practices. The course is structured through a series of applications in such topics as segregation, occupational choice, and repeated games. The course will be taught in R and STATA. Though helpful, no previous experience with R or STATA is required.

ECON 21730. Applied Behavioral Economics. 100 Units.
This class covers recent work in behavioral economics. Topics include discrimination, social pressure, social norms, identity and gender. Applications will cover a wide range of fields, including labor economics, finance, and political economy.

ECON 21740. Behavioral Economics and Experiments. 100 Units.
This is a hands-on course in behavioral economics. Basic concepts of preferences, traits, and behavioral biases are reviewed that link economics and psychology. Methods for eliciting traits and preferences will be taught and implemented in actual lab experiments. Grade will be determined by reports and quality of lab work.

ECON 21800. Experimental Economics. 100 Units.
This course provides the necessary tools to be an avid consumer of the experimental literature and instructs students on how to become a producer of that literature. Topics include a summary of recent experimental findings and details on how to gather and analyze data using experimental methods.

ECON 21830. Social Neuroscience. 100 Units.
Humans are intensely social animals. Our lives are intertwined with other people, and our well-being depends on others. Social neuroscience examines how the brain mediates social cognition and behavior. It spans diverse species, disciplines (evolutionary biology, neuroscience, anthropology, psychology, behavioral economics, sociology, and political science), and levels of analysis across the biological organization. Social neuroscience provides an overarching paradigm to investigate social cognition and behavior and to determine where we as a species fit within a broader biological context. A wide range of topics will be examined, including social connections and friendship, sex, mating and aggression, cooperation and social preferences, social and environmental influences on decision-making and behavior, empathy, social contagion, and group coalitions. Interdisciplinary analyses, by integrating approaches from social sciences and biological sciences, significantly expand our knowledge and have the potential to improve our social and living conditions.
Equivalent Course(s): NSCI 21000, HLTH 22350, PSYC 22350, CHDV 22350, BIOS 24137

ECON 22020. Economic Change in China, circa 1800-2000. 100 Units.
An overview of Chinese economic development since the end of the eighteenth century, with attention to its social, political, and environmental ramifications. Topics in the first part of the course include the Qing property-rights system and its implications for rural society; merchant organization; internal trade; migration; and the imperial political economy. This section of the course concludes with explanations of the economic and other crises that caused late-nineteenth- and early-twentieth-century China to be called the “land of famine.” Part two covers changes in China’s relationship to the outside world, the beginnings of industrialization, and the complex patterns of regional growth and stagnation up through the victory of the Communist Party in 1949. Part three looks at both Maoist (1949-1976) and post-Maoist development, emphasizing the economic consequences of institutional changes, industrialization and urbanization (especially since 1978), and the evolving tensions with a so-called “socialist market economy.” Mostly lecture, with some class time for discussions, plus an online discussion board; midterm, final, and two short papers (5-7 pages each). Equivalent Course(s): EALC 24621, HIST 24611

ECON 22030. The Chinese Economy. 100 Units.
This course provides an overview of the Chinese economy, with two main focuses. First, we will review the significant reforms that happened in China in the past four decades, which fundamentally reshaped the modern China as we see today. Second, we will discuss some of China’s key political and economic institutions, and their implications on China and the rest of the world. Throughout the course, special emphasis will be given to the role of the state in China’s growth experience, at both the central- and local-levels. Equivalent Course(s): PPHA 35585, PBPL 25585

ECON 22410. UChicago Economics: The People and the Seminal Ideas. 100 Units.
Econ 24720 or Econ 22410 may be used as an economics elective, but only one of the two may be used toward economics major requirements. This course will trace in general the history and evolution of economic thought as an intellectual discipline, from the Middle Ages through Adam Smith and the Classical dominance in the 18th and 19th centuries, to the neoclassical period and alternative schools, and then the rise of Keynesian economics and the emergence of the Chicago School of economics in the 20th century. With this background and context, the focus will turn to the theoretical and empirical contributions of important historical UChicago figures such as Veblen, Knight, Hayek, Friedman, Stigler, Coase and Becker as well as the seminal ideas of contemporary scholars, including several Nobel laureates, in the Department, other academic units on campus, and economists elsewhere with deep Chicago roots.

ECON 23000. Money and Banking. 100 Units.
This course covers economic theories and topical issues in money and banking. We discuss such “traditional” topics as the quantity theory, the Phillips curve, and the money creation process. We also investigate models of bank runs and financial crises, the tradeoff between rules and discretion, and the New Macroeconomic Synthesis of New Classical. Other topics include New Keynesian approaches to modeling money and monetary policy, practical and institutional issues in European and U.S. monetary policy, and the 2008 financial crisis.

ECON 23040. Cryptocurrencies. 100 Units.
This course will cover both the computer science aspects and economic aspects of cryptocurrencies. Topics to be discussed will include network and system building blocks, consensus protocols, cryptographic algorithms, security and privacy issues, pricing of cryptocurrencies, bubbles, monetary policy issues and regulatory concerns. Equivalent Course(s): CMSC 23280

ECON 23200. Topics in Macroeconomics. 100 Units.
This course focuses on the use of dynamic general equilibrium models to study questions in macroeconomics. Topics include long-run growth and dynamic fiscal policy (Ricardian equivalence, tax smoothing, capital taxation), labor market search, industry investment, and asset pricing. On the technical side, we cover basic optimal control (Hamiltonians) and dynamic programming (Bellman equations).

ECON 23410. Economic Growth. 100 Units.
The process of economic growth and the sources of differences in economic performance across nations are some of the most interesting, important and challenging areas in modern social science. You cannot travel or read the news without wondering why differences in standards of living among countries are so large. The primary purpose of this course is to introduce undergraduate students to these major issues and to the theoretical tools necessary for studying them. The course therefore strives to provide students with a solid background in dynamic economic analysis, as well as empirical examples and data analysis. We will cover models at an abstract and advanced level. You must have the degree of mathematical maturity associated with the concepts of functions, derivatives, integrals, Taylor series, optimization, ordinary differential equations. Some basic knowledge on regression analysis is also required.

ECON 23620. Inequality: A Perspective from Macroeconomics. 100 Units.
This is an advanced undergraduate course on inequality from a macroeconomic perspective. We will learn how to measure, model, and evaluate the distributional consequences of economic policies and institutions. There is a heavy empirical component: We will study the key features of the distributions of consumption, income, wealth, and leisure, and how these distributions evolve over time and over the lifecycle. There is a heavy theoretical
component: We will learn about the benchmark macroeconomic models that can be used to generate predictions about these distributions. There is a heavy computational component: We will learn how to solve heterogeneous agent models on a computer and compare model predictions with the data. Students should be familiar with a programming language such as Matlab, Python, Julia, Fortran, or C and with a statistical package such as Stata or R.

ECON 23950. Economic Policy Analysis. 100 Units.
Building on the tools and methods that are developed in the core courses, this course analyzes fiscal and monetary policy and other topical issues. We use both theoretical and empirical approaches to understand the real-world problems.

ECON 24000. Labor Economics. 100 Units.
Topics include the theory of time allocation, the payoffs to education as an investment, detecting wage discrimination, unions, and wage patterns. Most of the examples are taken from U.S. labor data, although we discuss immigration patterns and their effects on U.S. labor markets. Some attention is also given to the changing characteristics of the workplace.

ECON 24200. Topics: Microeconomics Family. 100 Units.

ECON 24270. Topic: Applied Price Theory: Individual and Family. 100 Units.

ECON 24450. Inequality and the Social Safety Net: Theory, Empirics, and Policies. 100 Units.
This course will introduce students to key economic and conceptual issues surrounding inequality and the social safety net. We will study the theoretical underpinnings and empirical analysis of the social safety net, focusing on the effects of social insurance and public assistance programs on individual and societal outcomes. After studying models of the insurance-incentive tradeoff, we will apply these models and econometric strategies to the empirical analysis of social safety net programs. We will study how social safety net programs interact with labor markets, specifically human capital investment and work decisions, and how they affect long-term outcomes such as income, health, well-being, and inequality. Students will learn how to analyze the tradeoffs involved in social safety net programs and will learn the current state of evidence on these programs.

ECON 24720. Inequality: Origins, Dimensions, and Policy. 100 Units.
For the last four decades, incomes in the United States and across the globe have grown more unequal. That fact has attracted worldwide attention from scholars, governments, religious figures, and public intellectuals. In this interdisciplinary course, participating faculty members drawn from across the University and invited guest speakers will trace and examine the sources and challenges of inequality and mobility in many of its dimensions, from economic, political, legal, biological, philosophical, public policy, and other perspectives. This course is part of the College Course Cluster program: Inequality. Equivalent Course(s): PBPL 28920, BPRO 28900

ECON 25000. Introduction To Finance. 100 Units.
This course develops the tools to quantify the risk and return of financial instruments. These are applied to standard financial problems faced by firms and investors. Topics include arbitrage pricing, the capital asset pricing model, and the theory of efficient markets and option pricing.

ECON 25100. Financial Economics; Speculative Markets. 100 Units.
This course focuses on the description, pricing, and hedging of basic derivative claims on financial assets. We study the characteristics, uses, and payoffs of a variety of contracts where the underlying claims include commodities, foreign currencies, bonds, stocks, or stock indices. We examine contracts such as options, swaps, and futures contracts. We use a unified approach (the technique of portfolio replication) to study pricing of these claims. Students also gain an understanding of strategies for hedging of the risks inherent in holding these derivative claims.

ECON 25130. Behavioral Finance. 100 Units.
This course is designed to give students an overview of psychological biases in financial decision-making and examine the impacts of these biases in financial markets. It will also introduce students to behavioral and experimental methodologies—both in the lab and in the field—used in finance. Topics include: non-expected utility theories under risk and ambiguity, biases in probabilistic judgment, framing, loss aversion, self-control and non-exponential discounting, mental accounting and herding.

ECON 25520. Development Economics and Data Analysis. 100 Units.
Why do some countries grow faster than others? Why do farmers not adopt new technologies that generate higher yields? What is the most effective way to improve health, education and women's empowerment in middle and low income countries? We will examine these questions by applying the tools of economics to the best available data. In addition to mastering the economic literature on development economics, students will learn applied econometric techniques and how to apply them in practice. They will learn how to critically evaluate data analysis and spot potential biases: is the outcome variable likely to be subject to social desirability bias? Is there potential selection bias or attrition bias? What techniques are best adapted to addressing these potential biases in the data? In the final part of the course we will cover the role of the International Financial Institutions (the IMF and World Bank) in international development. The course is designed for undergraduates
with a strong interest in economics and data and previous experience using statistical software (such as R or Stata).

**ECON 25530. Behavioral Development Economics (Undergraduate) 100 Units.**
This course will focus on the intersection of two rapidly growing and recently Nobel Prize-winning fields in economics - development, and behavioral economics. Behavioral development economics brings insights and tools from psychology and behavioral economics to the study of developing economies and poverty more generally. The class is aimed at students interested in either (or both) of the fields. A decent part of lectures will be focused on introducing and describing tools of behavioral economics, before moving to applications in low- and middle-income countries.

**ECON 26010. Public Finance. 100 Units.**
This course addresses the measurement, explanation, and consequences of government activity including tax systems, expenditure programs, and regulatory arrangements. Topics include cross-country comparisons of government behavior, market analyses of public policy, the incidence of government activity, and effects of economic activity on politics and public policy.

**ECON 26030. The Economics of Socialism. 100 Units.**
The course examines the economic theories of socialism ranging from Karl Marx's to market socialism, as well as theories of market power, collective action, and price regulation. These theories are applied to the measurement of socialism, income distribution, surplus value, and the degree of exploitation of labor. These metrics are used to compare various mixed economies including the Nordic model and various sectors in the United States. We consider how the economics of socialism might evolve as the health sector grows in the near future and artificial intelligence transforms the workplace in the long run.

**ECON 26040. Human Capital and the Economy. 100 Units.**
This course introduces the concept of human capital, its accumulation process, its role in family decisions, and its impact on the economy. Several models are presented and discussed, covering a wide range of topics, including parental altruism, education, bequests, health, fertility, support in old age, income inequality, intergenerational transmission of wealth, specialization, division of labor, and economic growth. The theory is complemented with historical evidence from different countries and periods.

**ECON 26530. Environment, Agriculture, and Food: Economic and Policy Analysis. 100 Units.**
The connections between environment, agriculture, and food are inherent in our social, cultural, and economic networks. Land use, natural resource management, energy balances, and environmental impacts are all important components in the evolution of agricultural systems. Therefore it is important to develop ways in which to understand these connections in order to design effective agricultural programs and policies. This course is designed to provide students with guidance on the models and tools needed to conduct an economic research study on the intersecting topics of environment, agriculture, and food. Students learn how to develop original research ideas using a quantitative and applied economic policy analysis for professional and scholarly audiences. Students collect, synthesize, and analyze data using economic and statistical tools. Students provide outcomes and recommendations based on scholarly, objective, and policy relevant research rather than on advocacy or opinions, and produce a final professional-quality report for a workshop presentation and publication. This small seminar course is open by instructor consent to undergraduate and graduate students who meet the prerequisites. For consideration, please submit a one-page proposal of research to pge@uchicago.edu.
Equivalent Course(s): ENST 26530, PBPL 26530, PPHA 32510

**ECON 26610. The Economics of Cities and Regions. 100 Units.**
This course studies business and individual location decisions and how they determine the main economic forces that lead to the existence and performance of cities and regional agglomerations. The course starts by developing a simple theory of cities and its implications for city size, firm productivity, and housing prices. It then studies evidence of the impact of cities on firm and worker productivity, urban amenities, and congestion. We will discuss the problems in measuring these forces, the methodologies to do so, as well as the implications of this measurement for businesses, individuals, and urban policy. We will also study the internal structure of cities, and how to evaluate the effect of new infrastructure or policy on land and housing values as well as on overall welfare. Finally, the course will analyze the role cities and regions play in aggregate economic development.

**ECON 26730. Global Energy & Climate Challenge: Economics, Science & Policy. 100 Units.**
The global energy and climate challenge is one of the most important and urgent problems society faces. Progress requires identifying approaches to ensure people have access to the inexpensive and reliable energy critical for human development, without causing disruptive climate change or unduly compromising health and the environment. The course pairs technical and economic analysis to develop an understanding of policy challenges in this area. Lecture topics will include the past, present, and future of energy supply and demand, global climate change, air pollution and its health consequences, selected energy technologies such as solar photovoltaics, nuclear power, unconventional oil and gas, and an analysis of theoretical and practical policy solutions in developed and emerging economies.
Equivalent Course(s): BPRO 29200, ENST 28220, PPHA 39905, PBPL 29200
ECON 26800. Energy and Energy Policy. 100 Units.
This course covers international economics with an emphasis on international trade. The basic theories of
international trade are introduced and used to analyze welfare and distributional effects of international trade,
government policies, and technology diffusion. In addition, this course also discusses the main empirical patterns
of international trade and international investment.
Equivalent Course(s): PBPL 27000

ECON 27100. Intro International Finance. 100 Units.
TBD

ECON 27210. Topics in International Macroeconomics. 100 Units.
This course introduces students to a variety of topics in international finance and open economy
macroeconomics. Focusing on theory we will consider questions such as: What are the gains from international
financial integration? Should nations attempt to "manage" capital flows? Are persistent current account deficits
"sustainable"? How do macroeconomic shocks get transmitted across countries? To what extent is the risk of
these shocks shared across countries? Should currency area borders coincide with national borders?

ECON 27700. Health Economics and Public Policy. 100 Units.
This course analyzes the economics of health and medical care in the United States with particular attention
to the role of government. The first part of the course examines the demand for health and medical and the
structure and the consequences of public and private insurance. The second part of the course examines the
supply of medical care, including professional training, specialization and compensation, hospital competition,
and finance and the determinants and consequences of technological change in medicine. The course concludes
with an examination of recent proposals and initiatives for health care reform. Must have completed PPHA 32300
Principles of Microeconomics and Public Policy I or equivalent to enroll.
Equivalent Course(s): PBPL 28300, CCTS 38300, PPHA 38300

ECON 27720. Economics and Regulation of Health Care Markets: Theory and Empirics. 100 Units.
This course explores theoretical and empirical facets of the economics of health care and the industrial
organization of the health care sector. The course primarily follows the approach of model-driven empirical
work, combining economic modelling with experimental and observational data to test for and quantify
theoretical predictions. Topics include asymmetric information, adverse selection, demand for medical care,
health care externalities, regulation of health insurance markets, health care outside the US, and public and
private incentives for medical research. A particular emphasis is on how government regulation and market
incentives interact in generating socially relevant outcomes.

ECON 28000. Industrial Organization. 100 Units.
This course extends the analysis from ECON 20100, with a focus on understanding the way firms make decisions
and the effects of those decisions on market outcomes and welfare. The course examines the structure and
behavior of firms within industries. Topics include oligopolistic behavior, the problems of regulating highly
concentrated industries, and the implementation of U.S. antitrust policy.

ECON 28010. Applied Empirical Industrial Organization. 100 Units.
In this course, students will learn how to apply techniques and models developed in industrial organization
and law and economics to important questions that arise in litigation and government regulation. We will be
guided and informed by pure theory underlying industrial organization and implement it in a world of partial
information, incomplete data, and even contradictory data, among other complexities. Students will learn how
to develop inferences by applying the models to real world cases and data - i.e., extracting the most information
possible from partial, imperfect data, frequently with missing values or poorly-measured data points. These
fact patterns will not always result in an incontrovertible answer. Thus, students will be expected to identify
and express the "best argument for" and "best argument against" the questions posed to them. This means that
students will be expected to (i) use theory as a guideline to assess the relevant facts, circumstances, and data,
(ii) reach a view, (iii) succinctly express that view in writing and acknowledge and address contrary theory and empirical results. Students will also see actual expert reports and/or white papers that have been prepared in actual disputes and investigations. Part of the grade will be based on an "expert report" written by the students in small teams.

**ECON 28030. Markets and Regulation. 100 Units.**

This is an applied industrial organization course that examines economically regulated market structures. We will analyze: a) types of market structures that particularly generate economic regulation; b) common methods used by regulatory agencies given a particular market structure; and c) models of the supply of and the demand for regulation of markets, with emphasis on maximizing behavior on the part of both suppliers (regulators) and demanders (firms, consumers, political representatives). We will focus on non-financial markets, as financial markets are well-covered in other courses.

Equivalent Course(s): PBPL 28670

**ECON 28060. The Economics of Organizations: An Experimental Perspective. 100 Units.**

This course offers an introduction to the experimental methodology while at the same time providing the students with up-to-date insights and findings on how to run an organization and how to manage a workforce. Students will learn the basics of the experimental methodology, learn about the most ground-breaking findings in experimental economics related to the functioning of firms, and know the relevant papers and findings in organizational and personnel economics with a particular emphasis on the question of how to set incentives for workers.

**ECON 28100. The Economics of Sports. 100 Units.**

This is a course in microeconomics that applies traditional product and factor market theory and quantitative analysis to contemporary economic issues in professional and college athletics. Topics include the sports business; market structures and outcomes; the market for franchises; barriers to entry, rival leagues, and expansion; cooperative, competitive, and collusive behavior among participants; labor markets, productivity, and compensation of players; racial discrimination; public policies and antitrust legislation; and financing of stadiums.

**ECON 28600. Economic Analysis of Law. 100 Units.**

This course involves the application of the choice theory of economics to the opportunities obtainable within different legal environments. The likelihood that a person will choose to return a lost wallet, keep a promise, drive more carefully, or heed the terms in a will is partly a function of the applicable laws and regulations. Alternative rules, under the standard Law and Economics approach, are compared in terms of the economic efficiency of their subsequent outcomes. This efficiency lens of Law and Economics is applied to rules concerning property, torts, contracts, and criminal behavior.

Equivalent Course(s): PBPL 28605

**ECON 28620. Crony Capitalism. 100 Units.**

The economic system prevailing in most of the world today differs greatly from the idealist version of free markets generally taught in economic classes. This course analyzes the role played by corporate governance, wealth inequality, regulation, the media, and the political process in general in producing these deviations. It will explain why crony capitalism prevails in most of the world and why it is becoming more entrenched also in the United States of America. The course, which requires only basic knowledge of economics, welcomes undergraduates. This is a non-Booth course offered under the ECON 28620 course number. To register, Booth and non-Booth students will request interest by completing an online form https://chicagoboost.au.qualtrics.com/jfe/form/SV_dg81GBgsXIfHT0pg which opens February 13, 2023 at 8:00 am Central Time. Enrollments for all students will be processed in timestamp order starting February 21. Students will be emailed if they are enrolled into or waitlisted for the course. The form will remain open through week 1, and will therefore act as the waitlist for the course. The deadline for enrollment processing will be the end of week 1 of spring quarter. This course will be offered as ECON 28620. Students must complete a poll which will open on Feb. 13, 2023 at 8:00 am Central Time. ECON 28620 is not eligible for pass/fail.

**ECON 28700. The Economics of Crime. 100 Units.**

This course uses theoretical and empirical economic tools to analyze a wide range of issues related to criminal behavior. Topics include the police, prisons, gang behavior, guns, drugs, capital punishment, labor markets and the macroeconomy, and income inequality. We emphasize the analysis of the optimal role for public policy.

Equivalent Course(s): PBPL 28670

**ECON 29200. Issues and Methods in Microeconomics. 100 Units.**

Microeconomics is the study of how agents make optimal choices when facing constraints. The course will start with a quick refresher in the "Economic Approach" as the basic tool for analysis in economics. We will continue with a model of causal inference, and link it with concepts students have learned in the econometrics course. Then, we introduce the use of experiments as an alternative methodology for the researchers to gather their own data. Finally, we cover some major topics in behavioral economics.

**ECON 29300. Issues and Methods in Macroeconomics. 100 Units.**

Using tools and methods in economics, we will study issues in macroeconomics and international trade and finance. The topics we cover include both contemporary and classical issues such as tax incidence and distortions, optimal taxation, inflation, monetary policy, patterns and benefits of trade, and exchange rate
determination. The objective of the course is to train students with analytical tools in macroeconomics so that they can understand, analyze, and evaluate various policies and policy proposals. To make the subject matter relevant and practical, students are strongly encouraged to read The Wall Street Journal and The Economist regularly to keep up with current events and controversies.

**ECON 29700. Undergraduate Reading and Research. 100 Units.**

Students are required to submit the College Reading and Research Course Form. Prerequisite(s): Consent of directors of the undergraduate program.

**ECON 29800. Undergraduate Honors Workshop. 100 Units.**

For details, see the preceding Honors section.

**ECONOMICS MASTER’S (ECMA) COURSES**

**ECMA 30750. The Theory of Market Design. 100 Units.**

This course will provide an introduction to social choice, two-sided matching, house allocation, school choice, and the recent theoretical developments in kidney exchange. We will develop formal, mathematical language to evaluate and compare different mechanisms including deferred acceptance, top trading cycles, the probabilistic serial mechanism and others. Our approach will be axiomatic; we will explore the tradeoff between the efficiency, incentive compatibility and fairness in the design of mechanisms. This course will be proof-based, so is appropriate for advanced students acquainted with formal mathematical reasoning.

Equivalent Course(s): ECON 20770

**ECMA 30780. Decision and Strategy II. 100 Units.**

We continue the formal introduction to decision theory and game theory begun in ECMA 30780, with a specific focus on models of incomplete information. Topics covered include subjective expected utility, Bayesian games, contract theory, and mechanism design. Among the applications we will consider are auctions, collusion, entry deterrence, and strategic communication. The course is appropriate for advanced undergraduates who are interested in a rigorous mathematical approach to decision making in strategic situations.

Equivalent Course(s): ECON 20780

**ECMA 30800. Theory of Auctions. 100 Units.**

In part, this course covers the analysis of the standard auction formats (i.e., Dutch, English, sealed-bid) and describes conditions under which they are revenue maximizing. We introduce both independent private-value models and interdependent-value models with affiliated signals. Multi-unit auctions are also analyzed with an emphasis on Vickrey’s auction and its extension to the interdependent-value setting.

**ECMA 31000. Introduction to Empirical Analysis. 100 Units.**

This course introduces students to the key tools of econometric analysis: Probability theory, including probability spaces, random variables, distributions and conditional expectation; Asymptotic theory, including convergence in probability, convergence in distribution, continuous mapping theorems, laws of large numbers, central limit theorems and the delta method; Estimation and inference, including finite sample and asymptotic statistical properties of estimators, confidence intervals and hypothesis testing; Applications to linear models, including properties of ordinary least squares, maximum likelihood and instrumental variables estimators; Non-linear models. Assignments will include both theoretical questions and problems involving data. Necessary tools from linear algebra and statistics will be reviewed as needed.

**ECMA 31100. Introduction to Empirical Analysis II. 100 Units.**

This course is an introduction to applied econometrics and builds on tools studied in ECMA 31000. Topics include: Selection on observables, instrumental variables, time series, panel data, discrete choice models, regression discontinuity, nonparametric regression, quantile regression.

**ECMA 31130. Topics in Microeconometrics. 100 Units.**

This course focuses on micro-econometric methods that have applications to a wide range of economic questions. We study identification, estimation, and inference in both parametric and non-parametric models and consider aspects such as consistency, bias and variance of estimators. We discuss how repeated measurements can help with problems related to unobserved heterogeneity and measurement error, and how they can be applied to panel and network data. Topics include duration models, regressions with a large number of covariates, non-parametric regressions, and dynamic discrete choice models. Applications include labor questions such as labor supply, wage inequality decompositions and matching between workers and firms. Students will be expected to solve programming assignment in R.

**ECMA 31140. Perspectives on Computational Modeling for Economics. 100 Units.**

In this course students will learn several computational methodologies and tools to solve, simulate, and analyze models that are the backbone of current macroeconomic analysis. While learning the relevant computational
methods is the main objective, the theoretical economic aspects of the model will be stressed and the students will be required to apply their economic knowledge and skills to interpret and analyze the results. We will examine non-stochastic and stochastic general equilibrium models, both under local and global approximations. The main part of the course will deal with representative agent models, but a significant part will be devoted to introducing students to the solution of heterogeneous agent models as well. Equivalent Course(s): MACS 30150

ECMA 31210. Time Series Analysis for Macroeconomics and Finance. 100 Units.
This course will cover various methods and their applications in time series analysis and emphasize empirical exercises by students. The structure of the course starts with theoretical foundations drawing from standard textbooks of Hayashi (2000) and Hamilton (1994) and covers applications to answer important questions in macro and finance. The topics include time series OLS with applications in the Fama interest rate regression and Hansen’s study of foreign exchange markets, GMM with the Fama-French model of equity returns, and state-space models with applications to GDP nowcasting. Familiarity with matrix algebra and elementary econometrics is required.

ECMA 31320. Applications of Econometric and Data Science Methods. 100 Units.
This course builds on the theoretical foundations set in Econ 21030 and explores further topics pertinent to modern economic applications. While the course content may change from year to year according to student and instructor interests, some potential topics are panel data methods, treatment effects/causal inference, discrete choice/limited dependent variable models, demand estimation, and topics in economic applications of supervised and unsupervised learning algorithms. The course will involve analytically and computationally intensive assignments and a significant empirical project component.

ECMA 31330. Econometrics and Machine Learning. 100 Units.
This course reviews a number of modern methods from econometrics, statistics and machine learning, and presents applications to economic problems. Examples of methods covered are simulation-based techniques, regularization via coefficient and matrix penalization, and regression and classification methods such as trees, forests and neural networks. Applications include economic models of network formation, and dimension reduction for structural economic models. The course involves programming and work with data. Beyond econometric background such as Econ 21030, students should have a solid background in computation.

ECMA 31340. Big Data Tools in Economics. 100 Units.
The goal of the class is to learn how to apply microeconomic concepts to large and complex datasets. We will first revisit notions such as identification, inference and latent heterogeneity in classical contexts. We will then study potential concerns in the presence of a large number of parameters in order to understand over-fitting. Throughout the class, emphasis will be put on project-driven computational exercises involving large datasets. We will learn how to efficiently process and visualize such data using state of the art tools in python. Topics will include fitting models using Tensor-Flow and neural nets, creating event studies using pandas, solving large-scale SVDs, etc.

ECMA 31350. Machine Learning for Economists. 100 Units.
This course reviews modern machine learning techniques and their applications in economics. The course covers some of the classical techniques, including lasso, regression trees, random forests, principal components analysis, and neural networks, as well as cutting-edge double machine learning methods. Applications include economic models of network formation, program evaluation, demand estimation, and asset pricing. The course involves programming and working with data. Students are expected to have a solid background in statistics, econometrics, and computation.

ECMA 31360. Causal Inference. 100 Units.
This course reviews modern causal inference techniques and their applications in business and economics. The course covers the treatment-control comparison estimator, regression adjustment, matching (on covariates and propensity score), difference in differences (canonical and with staggered treatment), panel data methods, regression discontinuity design (sharp and fuzzy), instrumental variables and local average treatment effect (LATE) estimator. At different points during the course, we mention how machine learning (ML) techniques have recently been used to enrich the classical methods. The course involves programming (R language) and working with data. Students are expected to have a solid background in statistics (working knowledge of R and familiarity with RStudio) and econometrics.

ECMA 33220. Introduction to Advanced Macroeconomic Analysis. 100 Units.
This course introduces students to advanced methods for macroeconomic analysis. In the first part, we discuss time series methods such as impulse response analysis, vector autoregression, co-integration, shock identification, and business cycle detrending. In the second part, we examine and analyze a simple, yet powerful stochastic dynamic real business cycle model. In that context, the students will learn about dynamic programming, rational expectations, intertemporal optimization, asset pricing, the Frisch elasticity of labor supply, log-linearization, and computational tools to solve for the recursive law of motion of dynamic stochastic general equilibrium models. Finally, we touch upon some further models, such as the overlapping generations model and/or the continuous-time neoclassical growth model. The course is useful for students interested to deepen their knowledge in macroeconomics, in order to read, understand, and replicate some of the recent research in the field; as preparation for careers involving macroeconomic analysis, time series analysis, or asset
Economics

pricing; or as preparation for graduate school. Decent knowledge of linear algebra and calculus is required. All advanced material will be taught in class.

ECMA 33221. Introduction to Advanced Macroeconomic Analysis II. 100 Units.
This course introduces concepts and tools for advanced macroeconomics. It builds on ECMA 33220. We discuss the decision of consumption and investment over time, monetary economics, fiscal policy, asset pricing, and international economics. We introduce numerical methods to solve problems in economics and finance such as methods to solve nonlinear equations and to generate random numbers. These methods are useful when we solve economic models through value-function iterations, quadratic linearization, and other methods. Some topics discussed are the welfare cost of inflation, portfolio allocation, the yield curve and economic activity, optimal taxation, and financial markets and monetary policy. As ECMA 33220, this course is useful for students interested in increasing their knowledge in macroeconomics for careers involving macroeconomic analysis and as preparation for graduate school. Knowledge of calculus and linear algebra is expected.

ECMA 33230. Macroeconomic Crises. 100 Units.
This course introduces students to economic theories of "crises" or particular periods of rapid (negative) changes in real and financial variables that are distinct from long-run growth and regular business cycles. In particular, we will cover the origin of various types of financial crises, i.e. speculative bubbles, bank runs, credit crunches, and sovereign debt crises and defaults. Time permitting, we will also study currency crises and speculative attacks. Throughout, our focus will be on the implications for fiscal and monetary policy.

ECMA 33330. Introduction to Dynamic Economic Modeling. 100 Units.
This course provides an introduction to dynamic economic models, with applications to macroeconomics, labor economics, financial economics, and other subfields of economics. The core methodology will be consistent over time, but the applications will vary from year to year. The course will analyze decentralized equilibrium and social planner's problems in dynamic environments. It will focus on developing techniques for analyzing such models graphically, analytically, and computationally. Students should be familiar with constrained optimization (e.g. Lagrangians), linear algebra, and difference equations, as well as microeconomics, macroeconomics, and econometrics at an intermediate level.

ECMA 33603. Introduction to Macroeconomics and Financial Frictions. 100 Units.
This course studies the behavior of consumers, investors, and firms when they face frictions to take their decisions. These frictions can be in the form of costs to change portfolios, to change prices, or to find another investor to trade. Frictions also appear in the form of borrowing costs, the possibility of default, or the need to use money to carry on transactions. We show how taking into account these frictions change predictions about the economy. Borrowing constraints, for example, affect interest rates, and the need to rebalance portfolios changes predictions on optimal taxation. We discuss models, techniques and papers that show the relevance of frictions for economic analysis.

ECMA 33620. Introduction to Heterogeneous Agent Macroeconomics. 100 Units.
This class is an introduction to macroeconomics with heterogeneous households. We will study consumption-savings problems, income dynamics, wealth inequality in partial and general equilibrium, and the effects of fiscal and monetary policy in the presence of household inequality. The class will make use of theoretical analysis, empirical analysis and computational methods. Material will be presented in both discrete and continuous time. Students will analyze micro-level data on wealth, income and consumption, and will learn how to write code to solve heterogeneous agent models on a computer. Familiarity with a statistical package such as R or Stata, and a programming language such as Matlab, Python, Julia, Fortran or C is highly recommended.

ECMA 33550. The Practicalities of Running Randomized Control Trials. 100 Units.
This course is designed for those who plan to run a randomized control trial. It provides practical advice about the trade-offs researchers face when selecting topics to study, the type of randomization technique to use, the content of a survey instruments, analytical techniques and much more. How do you choose the right minimum detectable effect size for estimating the sample size needed to run a high quality RCT? How do you quantify difficult to measure outcomes such as women's empowerment or ensure people are providing truthful answers when you are asking questions on sensitive topics like sexual health? When should you tie your hands by pre-committing to your analysis plan in advance, and when is a pre-analysis plan not a good idea? This course will draw on lots of examples from RCTs around the world, most (though not all) from a development context. Alongside field tips, it will also cover the concepts and theory behind the tradeoffs researchers face running RCTs. The course is designed for PhD students but given its practical nature is open to and accessible to masters students who plan to work on RCTs. Equivalent Course(s): ECON 35550, PPHA 35561

ECMA 36700. Economics of Education. 100 Units.
This course explores economic models of the demand for and supply of different forms of schooling. The course examines the markets for primary, secondary, and post-secondary schooling. The course examines numerous public policy questions, such as the role of government in funding or subsidizing education, the design of public accountability systems, the design of systems that deliver publicly funded (and possibly provided) education, and the relationship between education markets and housing markets. Equivalent Course(s): EDSO 26700, PBPL 26705
ECMA 38010. Empirical Industrial Organization. 100 Units.
This course will provide an introduction to state-of-the-art methodologies in Empirical Industrial Organization. We will use real-life data to learn about consumers and firms. We will cover demand and preference estimation, production function estimation, empirical models of market entry, and auctions. We will also discuss applications including prediction, policy analysis, and price optimization. Students will learn about theory, estimation, optimization, and practical considerations. Students will apply what they learn using R.

BUSINESS ECONOMICS COURSES

BUSN 20550. Application Development. 100 Units.
The new reality is that every company is a software company. Even in traditionally brick-and-mortar industries, software is performing more and more of the work. Many companies (especially "lean startups") are purely software-based. Lacking an understanding of how software works and how software is built puts you at a disadvantage. Our goal is to develop an understanding of both. We believe the best way to do that is to build something yourself, using modern languages and workflows. You will build a functional prototype of your own app idea, and will learn the Ruby on Rails web application framework. Higher-level goals are to: 1. Understand the general, platform-independent patterns of how apps work. 2. Communicate more effectively and credibly. 3. Develop a builder’s eye for problems that can be solved with technology. 4. Prioritize features more intelligently by developing a better feel for their costs. 5. Implement a modern software development workflow, from task management to quality assurance to deployment. 6. Be able to make and test small changes to an app yourself. This course is entirely project-driven. We will build a series of apps in class. Also, you will build your own app idea which will be your final project. This course is designed for a beginner who has never programmed before. Note: Due to the intensive support requirements and volume of requests, we can't allow auditors.

BUSN 20930. Social Sector Strategy and Structure. 100 Units.
The social sector, which encompasses nonprofit & for-profit firms that are primarily pursuing a solution to social or environmental issues, is an increasingly important sector. This course provides an overview of the structures, strategy frameworks, and management tools employed by social sector organizations to ensure that they deliver on the impact they seek. In particular, the course examines those approaches that differ from managing a non-impact seeking venture. The same fundamental approaches to marketing, competitive analysis, etc. can be translated across contexts. Where there are differences, however, they are important. We will review & analyze the distinctive challenges of managing for social or environmental impact, as opposed to profit maximization. We will use cases & exercises to examine and unpack social sector management and strategy. This includes how organizations are structured from a tax-status perspective; common business models; management tools such as the construct of theory of change/intended impact, impact measurement, marketing to donors & beneficiaries; managing paid & unpaid labor; funding sources such as philanthropy & impact investing; governance; and scale and growth. This is a “survey course” of the management tools, strategy frameworks, and structural approaches used in the social sector. It is not deep dive into any of these topics, and is designed to provide any student with a working knowledge of managing social sector organizations.

Accounting Courses

BUSN 20100. Financial Accounting. 100 Units.
This course provides an introduction to financial statements and the financial reporting process from a user’s perspective. The focus of the course is on fundamental accounting concepts and principles. Students learn how the economic transactions of a firm are reported in the financial statements and related disclosures. The objective of the course is to provide students with basic skills necessary to read and analyze financial statements as well as to prepare students for more advanced financial statement analysis courses.

BUSN 20101. Managerial Accounting. 100 Units.
This course focuses on internal operations, cost analysis, and performance evaluation, as opposed to the evaluation of external financial statements. Its targeted audience includes students intending become management consultants, entrepreneurs, managers (e.g., CEOs, CFOs, COOs, and product managers), and anyone with an interest in understanding how firms (1) make decisions about products and services and (2) evaluate performance and control risk. Topics covered include overhead allocation, activity based costing, opportunity cost of excess capacity, customer profitability, capital budgeting, transfer pricing, performance evaluation, risk management, internal controls, and fraud. Applications cover both the manufacturing and services sectors.

BUSN 20140. Accounting and Financial Analysis. 100 Units.
Course is designed to improve students’ understanding of financial information beyond an intro accounting class. It is designed to provide the knowledge of financial statements necessary to conduct a reasonably sophisticated financial statement analysis. Focus is on the use of financial statements, although this requires some understanding of the process by which financial statements are produced. It will benefit students who want to become investment bankers, economic consultants, analysts, or other jobs that requires more than a superficial understanding of financial reporting. Not limited to study of financial statements. Will also work with supplemental disclosures, which help the user to interpret the financial statements and to understand better the economic transactions that gave rise to them. Techniques employed will be useful for variety of purposes including (but not limited to) equity, credit, and complex deals (such as M&A) analysis. Although this course does not cover forecasting, valuation, or models of complex deals, a thorough understanding of financial
Entrepreneurship Courses

BUSN 20330. Building the New Venture. 100 Units.
This course is intended for students who are interested in starting new entrepreneurial businesses. It is tactical, hands-on, and covers the nuts and bolts of starting a company with a lesser emphasis on investing in entrepreneurial ventures. Students will learn how to raise seed funding, compensate for limited human and financial resources, establish brand values and positioning, secure a strong niche position, determine appropriate sourcing and sales channels, and develop execution plans in sales, marketing, product development and operations. The emphasis is managerial and entrepreneurial, essentially a working model for starting an enterprise. This class is executed through a combination of lectures, group assignments based on student's new venture ideas, case discussions, VC and entrepreneur guest lectures and panels, and ultimately ties together in a pitch at the end of the quarter to a panel of VC observers.

BUSN 20340. Developing a New Venture. 100 Units.
This course is designed to guide groups of students through the new venture creation process. Students will have passed through the first round of the College New Venture Challenge, and will be developing their own original new business ideas. Students may enter the course with ideas that are traditionally for-profit in nature or more socially oriented (either for- or not-for-profit ventures). Students in this course can expect to learn: • how to evaluate the potential and viability of their entrepreneurial ideas • how to conduct research on specific market opportunities • how to analyze the competitive landscape • have to evaluate the merits and drawbacks of unique business models • how to pitch their idea/venture to investors, experts, mentors, and fellow entrepreneurs

Additional topics include financial projections, product/technology development, legal issues for startups, and entrepreneurial marketing tactics. Students must prepare and submit original feasibility summaries prior to the application deadline. During the course, students will expand these summaries into full business plans, and will be required to present their ventures multiple times to venture capital investors, entrepreneurs, and startup mentors. Students interested in careers in: startups, technology, business, consulting, and management are encouraged to take this course. Enrollment by permission based on the feasibility summary application. This course is not open to MBA students.
BUSN 20920. Social Entrepreneurship and Innovation. 100 Units.
We will study social innovation with a focus on the role of social entrepreneurship for implementing innovative solutions to society’s problems. A team of 4 students will be assigned with an innovative idea that addresses a social problem and could become a (for-profit or non-profit) social venture. Students will provide their preferences for assignment from a list of preselected ideas. Teams will essentially develop a business idea around this innovation. To achieve this, students will research the relevant literature, conduct customer discovery, analyze the competitive landscape, validate and refine the offering, propose a business model, articulate a theory of change, and identify an impact management strategy. Teams will present to the idea sponsor at the end of the quarter and in a mid-quarter check-in. The hope is that there will be sufficient validation and interest to move forward with some of these ventures with students involved in or leading the venture. One path is to participate in the John Edwardson, ‘72, Social New Venture Challenge. Much of class time will be devoted to group exercises to implement frameworks to answer these questions for the projects as well as a set of case study examples we will use throughout the course. In addition, there will be readings and discussions on a set of topics to provide a broader understanding of the economics of social innovation and its relationship to more traditional innovation. Grading will be based weekly project.

Finance Courses

BUSN 20400. Investments. 100 Units.
This course offers the financial theory and quantitative tools necessary for understanding how stock, bond, and option prices are determined, and how financial assets are used for investment decisions. Topics covered include the following: the term structure of interest rates; portfolio selection based on mean-variance analysis; models of risk and return (including the CAPM and multifactor models); performance evaluation; market efficiency and the random walk hypothesis; asset pricing anomalies and behavioral finance; derivative security pricing (including options, futures, forwards, and swaps); and international investment. This course is not open to MBA students.

BUSN 20405. Financial Instruments. 100 Units.
This course develops, critically assesses, and applies theories of pricing derivatives. Topic discussed are: forward and futures contracts; interest rate and currency swaps; option trading strategies; binomial option pricing; the Black-Scholes-Merton option pricing model and extensions; risk management with options; empirical evidence and time-varying volatility; the pricing and hedging of corporate securities (common stock, senior and junior bonds, callable bonds, warrants, convertible bonds, and putable bonds); credit risk; and real options.

BUSN 20410. Corporation Finance. 100 Units.
This course provides you with an understanding of major decisions made by corporate financial managers and to familiarize you with the tools used to make these decisions. The first part of the course covers methods used to value investment opportunities. Particular attention is given to discounted cash flow valuation, including the methods of weighted average cost of capital (WACC) and adjusted present value (APV). The second part of the course focuses on issues of corporate financial structure. The focus will be on the choice of financing through equity, debt and other types of securities and on payout policies through dividends. Specialized topics, such as mergers and acquisitions and corporate hedging will be covered as time permits.

Management Courses

BUSN 20600. Marketing Management. 100 Units.
The objective of the course is to provide an intro to marketing strategy. The course develops a common framework (3Cs/4Ps) to analyze real world problems presented in business cases and synthesize recommendations addressing strategic marketing issues. Numerous tools used to support the framework are also introduced. GOALS: 1. Introduce marketing strategy and elements of marketing analysis or business situation analysis: Customer analysis, Company analysis and Competitor analysis (3Cs). 2. Develop familiarity with tactical use of elements of the marketing mix - product policy, pricing, promotion and placement/distribution (4 Ps)-in a manner consistent with marketing analysis and strategy. 3. Integrate elements of the framework prescriptively into real world business situations. 4. Provide exposure to business case analysis and critical thinking common in case-based business classes. FORMAT: Approximately 1/2 of each class is discussion of business cases. Remainder of class is dedicated to the discussion of several business examples which will highlight and practically demonstrate the theories, concepts, analytical techniques and empirical findings useful in marketing management in slide decks on Canvas. Study groups of 4-5 students will work on exercises and brief in-class presentations using tools from lectures. Students will also write-up (typically 1-2 pages) several cases individually using a format provided in class. Content includes some light quantitative work.

BUSN 20701. Managing in Organizations. 100 Units.
Successfully managing other people - be they competitors or co-workers - requires an understanding of their thoughts, feelings, attitudes, motivations, and determinants of behavior. Developing an accurate understanding of these factors, however, can be difficult to achieve because intuitions are often misguided and unstructured experience can be a poor teacher. This course is intended to address this development by providing the scientific knowledge of human thought and behavior that is critical for successfully managing others, and also for successfully managing ourselves.

BUSN 20702. Managerial Decision Making. 100 Units.
This course is designed to make you a better decision maker. Good decision makers know how to recognize decision situations, then how to represent the essential structure of the situations, and how to analyze them with
the formal tools from decision theory. But, perhaps more important, they need to be able to think effectively about the inputs into a decision analysis, whether to trust the analysis, and how to use the outputs to guide actions by themselves and their firms. And, maybe most important of all, they need to know how to make effective, unaided intuitive decisions, and to recognize the limits on their intuitive skills. This course will move back and forth between formal, optimal models and behavioral, descriptive models to help you understand and improve your native decision making abilities.

BUSN 20710. Behavioral Economics. 100 Units.
Behavioral economics applies psychological insights to economic markets and decision making. In this class, we will discuss the recent theoretical and empirical advances that have been made in this increasingly important field of economics. Being thoughtful about the role of psychology can lead to a greater understanding of how the economy works.

BUSN 20711. Choosing Leadership. 100 Units.
Get a head start on your personal leadership development journey by asking critical questions that most others wait to ask such as: What makes me a good leader? How can I improve my leadership skills? How can I add value by creating meaning? What is my definition of leadership? This course is about the practice of leadership. We take the approach that leadership development is an ongoing process of self-discovery. The content is based on insights from the core discipline of social psychology. Students use the data of their own experience as input together with a series of written assignments and in-class activities, including discussions, films, simulations, and peer coaching. The course enables students to engage in reflection, explore values and assess how they want to skillfully apply these lessons to their own leadership practice. No prerequisites.

Marketing Courses
BUSN 20600. Marketing Management. 100 Units.
The objective of the course is to provide an intro to marketing strategy. The course develops a common framework (3Cs/4Ps) to analyze real world problems presented in business cases and synthesize recommendations addressing strategic marketing issues. Numerous tools used to support the framework are also introduced. GOALS: 1. Introduce marketing strategy and elements of marketing analysis or business situation analysis: Customer analysis, Company analysis and Competitor analysis (3Cs). 2. Develop familiarity with tactical use of elements of the marketing mix - product policy, pricing, promotion and placement/distribution (4 Ps)-in a manner consistent with marketing analysis and strategy. 3. Integrate elements of the framework prescriptively into real world business situations. 4. Provide exposure to business case analysis and critical thinking common in case-based business classes. FORMAT: Approximately 1/2 of each class is discussion of business cases. Remainder of class is dedicated to the discussion of several business examples which will highlight and practically demonstrate the theories, concepts, analytical techniques and empirical findings useful in marketing management in slide decks on Canvas. Study groups of 4-5 students will work on exercises and brief in-class presentations using tools from lectures. Students will also write-up (typically 1-2 pages) several cases individually using a format provided in class. Content includes some light quantitative work.

BUSN 20610. Pricing Strategy. 100 Units.
This course blends marketing analytic frameworks, marketing strategy & microeconomic theory, and data to formulate actionable pricing strategies. Students will learn how to coordinate pricing decisions with the rest of the marketing value proposition. Numerous pricing structures are developed in the course, along with their microeconomic foundations. Students will learn the underlying theory for each pricing structure, along with the practical considerations for implementation.

BUSN 20620. Data Driven Marketing. 100 Units.
Marketing decisions in the era of big data are increasingly based on a statistical analysis of large amounts of transaction and customer data that provides the basis for profitability and ROI predictions. The goal of this class is to introduce modern data-driven marketing techniques and train the students as data scientists who can analyze data and make marketing decisions using some of the state-of-the-art tools that are employed in the industry. We will cover a wide range of topics, including demand modeling, the analysis of household-level data, customer relationship management (CRM) and database marketing, and elements of digital marketing. The focus throughout is on predicting the impact of marketing decisions, including pricing, advertising, and customer targeting, on customer profitability and the return on investment (ROI) from a customer interaction.

Operations Courses
BUSN 20500. Operations Management. 100 Units.
This core course focuses on understanding levers for structuring, managing, and improving a firm’s recurring business processes to achieve competitive advantage in customer responsiveness, price, quality, and variety of products and services. These levers are broadly applicable to service firms, for example banks, hospitals, and airlines, as well as to traditional product-based firms. Processes within firms, as well as between firms, i.e. supply chains, are explored. The fundamental principles underlying state-of-the-art practices, such as Lean, Mass Customization, and Time-Based Competition, are explored so that students learn to critically evaluate these and other operational improvement programs. Students learn the basics of how to manage the operations of a firm, and how operations issues affect and are affected by the many business decisions they will be called upon to make or recommend in their careers. As such, this course is essential to students aspiring to become consultants, entrepreneurs, or general managers. A working knowledge of operations is also indispensable to those interested
in marketing, finance, and accounting, where the interface between these functions and operations is critical. Finally, an understanding of how firms become market leaders through operations is important in investment careers. This course is not open to MBA students.

**BUSN 20510. Managerial Decision Modeling. 100 Units.**
This course is designed to sharpen students’ analytical skills and elucidate quantitative modeling as an aid in managerial decision-making. The course teaches various ways to frame, set up and solve managerial questions about resource allocation, revenue management, finance, marketing, operations and risk analysis using Microsoft Excel, as well as various tools and add-ins. The course will introduce various modeling frameworks and analytical tools in optimization and simulation. Students in this course will become proficient in formulating relevant managerial questions in the language of optimization and simulation modeling, as well as in solving the resulting problems using the frameworks covered in the course and interpreting the results. The course involves hands-on active learning through in-class cases and examples, homework and term project which applies the tools and modeling frameworks learned in the course to a business problem.

**BUSN 20520. Supply Chain Management. 100 Units.**
The supply chain of a firm is critical to its performance. Supply chains are networks of organizations that supply and transform materials and distribute final products to consumers. If designed and managed properly, these networks can be a crucial source of competitive advantage for both manufacturing and service enterprises. Students will learn how to examine and improve the flow of materials and information through this network of suppliers, manufacturers, distributors, and retailers in order to match supply with demand (i.e., to get the right products to the right customers in the right amount and at the right time). Key topics include intra- and intra-firm coordination, incentive design, the impact of uncertainty, and the role of information technology. Special emphasis is given to understanding how the business context shapes managerial decisions regarding the strategic design and management of the supply chain.

Statistics Courses

**BUSN 20800. Big Data. 100 Units.**
Big Data is a course about data mining: the analysis, exploration, and simplification of large high-dimensional datasets. Students will learn how to model and interpret complicated ‘Big Data’ and become adept at building powerful models for prediction and classification. Techniques covered include an advanced overview of linear and logistic regression, model choice and false discovery rates, multinomial and binary regression, classification, decision trees, factor models, clustering, the bootstrap and cross-validation. We learn both basic underlying concepts and practical computational skills, including techniques for analysis of distributed data. Heavy emphasis is placed on analysis of actual datasets, and on development of application specific methodology. Among other examples, we will consider consumer database mining, internet and social media tracking, network analysis, and text mining.

**BUSN 20810. Machine Learning. 100 Units.**
Students will learn about state-of-the-art machine learning techniques and how to apply them in business related problems. Techniques will be introduced in the context of business applications and the emphasis will be put on how machine learning can be used to create value and provide insights from data. First, and the biggest, part of the class will focus on predictive analytics. Students will learn about decision trees, nearest neighbor classifiers, boosting, random forests, deep neural networks, naive Bayes and support vector machines. Among other examples, we will apply these techniques to detecting spam in email, click-through rate prediction in online advertisement, image classification, face recognition, sentiment analysis and churn prediction. Students will learn what techniques to apply and why. In the second part of the class, students will learn about unsupervised techniques for extracting actionable patterns from data. Examples include clustering, collaborative filtering, probabilistic graphical modelling and dimension reduction with applications to customer segmentation, recommender systems, graph and time series mining, and anomaly detection.

**BUSN 20820. Financial Econometrics. 100 Units.**
This course covers a variety of topics in financial econometrics. The topics covered are of real-world, practical interest and are closely linked to material covered in other advance finance courses. Topics covered include ARMA models, volatility models (GARCH), factor models, models for time varying correlations, analysis of panel data, cointegration models for long-run co-movement between prices and models for transactions data and the analysis of transactions cost.

Strategy and the Business Environment Courses

**BUSN 20200. Macroeconomics and the Business Environment. 100 Units.**
This course is designed to introduce students to classic macroeconomic issues such as economic growth, recessions, unemployment, inflation, interest rates, government deficit, international capital flows, and exchange rates. The course will provide a unified framework to address these issues and to study the impact of different policies, such as monetary and fiscal policies, on the aggregate behavior of the economy. The analytical tools developed in class will be used to understand the recent experience of the United States and of the world economy and to discuss current policy debates.

**BUSN 20230. International Financial Policy. 100 Units.**
This course will help students develop an understanding of issues in international macroeconomics that are important for investors and managers operating in the global marketplace. It will cover theories of the
of strategies, and explore how lessons learned from such games can guide one’s thinking in everyday strategic
considerations. How should one bid at an auction in order to win at the lowest possible hammer price? How do firms
behave in which they operate. The quality and accuracy of arguments in this environment vary, but usually include
assertions that a business or its leaders are behaving unethically or lack legitimacy. The ability to assess these
claims, and to address them effectively when you think the facts and arguments are on your side, is a crucial
skill, especially given the extensive influence of governments, pressure groups and the media. This course
requires students to consider how their views on the role and conduct of business relate to the ideas of important
thinkers, and to apply their views to business settings by discussing controversial topics or decisions.

ECONOMIC COURSES

ECON 10000. Principles of Microeconomics. 100 Units.
By way of economic theory, applications, and contemporary issues, this course treats (1) the behavior and
decision making on the part of individuals, business firms, and governments; and (2) the function of costs, prices,
incentives, and markets in the American economy. We discuss contemporary topics (e.g., distribution of income,
the environment, education, sports, health care). This course is formerly known as Econ 19900: Introduction to
Microeconomics. Students may substitute "Econ 20000: The Elements of Economic Analysis I" for this course in
the business economics track.

ECON 10200. Principles of Macroeconomics. 100 Units.
By way of theoretical and public policy applications, this course covers current major domestic and international
macroeconomic issues in the U.S. economy, including the determination of income and output, inflation,
unemployment, and economic growth; money, banking, and the Federal Reserve System; federal spending,
taxation, and deficits; and international trade, exchange rates, and the balance of payments. This course is
formerly known as Econ 19900: Introduction to Macroeconomics. Students may substitute "Econ 20200: The
Elements of Economic Analysis III" for this course in the business economics track.

ECON 10700. Introductory Game Theory. 100 Units.
How should one bid at an auction in order to win at the lowest possible hammer price? How do firms behave
when they possess market power but also face competition? Why do companies engage in R&D races in order
to release their new products sooner than their competitors? Why do the Republicans and the Democrats almost
always end up choosing moderates as their party nominees in presidential races? To what extent can the veto
power of presidents allow them to influence legislative outcomes? To answer these questions, we study Games
of Strategies, and explore how lessons learned from such games can guide one’s thinking in everyday strategic
interactions.

ECON 11010. Introduction to Statistical Methods in Economics. 100 Units.
This course provides a solid foundation in probability and statistics for economists. We emphasize topics needed
for further study of econometrics in ECON 11020. Topics TBD.

ECON 11020. Introduction to Econometrics. 100 Units.
The objective of this course is to introduce students to the practice of econometrics. The course will focus on the
use of multiple regression as a tool to establish causal relations. The course emphasizes all steps of the process
of empirical research: data collection, analysis, and presentation (both written and oral). Multiple examples of this process will be discussed and students will be expected to read and evaluate existing research. Students will apply the techniques discussed in class to a topic of their choosing. They will write a paper and present results to the class.

**ECON 11050. Introduction to Empirical Methods for Social Science Research. 100 Units.**
The goal of the course is to provide basic training in how to analyze and interpret quantitative data. The first part is a description of methods to graph and represent data sets. Emphasis will be given on methods that provide an intuitive sense of empirical relationships, using examples from discontinuity designs and difference-in-differences ("diff in diff"). Then, regression analysis will be covered, explaining how linear regression methods can be used to uncover rich and informative patterns from the data, including nonlinear relationships. Students will be introduced to causality and instrumental variables methods. The course will use a variety of empirical examples from published papers. Students will be asked to experiment with data sets and apply the methods by themselves.

**ECON 11310. Big Data and Better Decisions. 100 Units.**
This course will introduce students to advanced methods for data driven decision making with an emphasis on business applications. Students will learn how to build and interpret models that address two fundamental categories of business questions: (i) causal analysis and (ii) forecasting and prediction. The first portion of the course will cover experimental design, as well as non-experimental causal inference (e.g. matching, fixed effects, differences-in-differences, synthetic control). The second portion of the course will focus on machine learning topics including linear regularization, cross validation, tree models, random forests and boosting. The course will also explore using edge methods at the intersection of causal inference and machine learning. Heavy emphasis will be placed on discussion of real examples and business applications of these methodologies. The course work will include writing code and analyzing data in R to learn how these techniques are implemented in practice.

**ECON 11600. Experimental Design. 100 Units.**
The course equips students with the necessary skills to design and execute experiments effectively. In the first part of the course, students will learn why experiments are conducted and explore different types of experiments along with their respective advantages and disadvantages. Students will gain insights into choosing appropriate incentive structures and appropriate sample sizes. The course addresses critical issues, including internal and external validity, scalability concerns, and the risks of P-hacking and multiple hypothesis testing. Students will also learn about Institutional Review Board procedures. In the second part of the course, students will learn how to measure time preferences, risk preferences, subjective expectations, other-regarding preferences, competitiveness, and discrimination.

**ECON 11700. Introduction to Behavioral and Experimental Economics. 100 Units.**
This is an introductory course to experimental economics and on how to gather your own data using experimental methods to answer important economic questions. This methodology will be applied to learn the main topics in behavioral economics that leverages psychological insights to decision making and its effects on markets. Students may use this course to satisfy the microeconomics method requirement for the business economics specialization.

**ECON 11800. Economics from an Experimental Perspective. 100 Units.**
A growing field in which the University of Chicago has been a leader, experimental economics uses experimental methods - observing everyday interactions and decisions made by people either in the lab or in the field -- to explore economic questions ranging from how markets and other exchange systems work to what motivates people to make decisions about matters such as conserving environmental resources or donating to charitable causes. Students will participate in laboratory experiments and discuss the results, thereby learning the underlying economic principles and the economic questions that the experiments were designed to address. They will also engage in solving specific economic problems both individually and in a group.

**ECON 12210. Economic History II: The Early Modern World, circa 1300-1800. 100 Units.**
This course both describes preindustrial economic life and weighs the models used to explain fundamental changes to it. We will begin by describing some of the basic structures that determined patterns of production, exchange, and consumption in a period of low and easily reversible growth. These include agricultural productivity, demographic constraints, modes of transportation, and the social structures that governed the distribution of what little surplus premodern societies produced. Turning to the sources of economic dynamism that may have contributed to later industrialization, we will first examine the growth of long-distance trade networks starting in the late fourteenth century. How were traditional economies characterized by limited movement stimulated by the circulation of people, goods, and money from afar? We will then move to a discussion of the factors leading to (or frustrating) transformational patterns of economic growth: agricultural productivity, institutions, "proto-industrial" production in an era of limited urban growth, and changing norms of consumption. This course is part of the College Course Cluster program: Economic History, from Sumer to the Global World.
Equivalent Course(s): HIST 19402
ECON 12220. Economic History III: The Global Economy from Great Depression to Great Recession. 100 Units.
This is the third part in the economic history sequence. Topics include the second Industrial Revolution and the new imperialism, the Great Depression and World War II, the American postwar world economic order, communism, and third-world development; globalization, growth, inequality, and climate change; the great recession. This course is part of the College Course Cluster program: Economic History, from Sumer to the Global World.
Equivalent Course(s): HIST 29533, HIST 39533

ECON 12300. Character and Commerce: Practical Wisdom in Economic Life. 100 Units.
Most of us seek to be reasonably good people leading what we take to be successful and satisfying lives. There is a mountain of evidence suggesting that most of us fail to live up to our own standards. Worse, we often fail to mark our own failures in ways that could help us improve ourselves. The context in which we try to live good lives is shaped by the vicissitudes of the global economy. The global economy is obviously of interest to those of us studying economics or planning on careers in business. Aspiring entrepreneurs or corporate leaders have clear stakes in understanding practical wisdom in the economic sphere. But anyone who relies upon her pay - or someone else's - to cover her living expenses has some interest in economic life. In this course, we will bring work in neo-Aristotelian ethics and neo-classical economics into conversation with empirical work from behavioral economics and behavioral ethics, to read, write, talk, and think about cultivating wisdom in our economic dealings. While our focus will be on business, the kinds of problems we will consider, and the ways of addressing these, occur in ordinary life more generally - at home, in academic settings, and in our efforts to participate in the daily production and reproduction of sound modes of social interaction. (A)
Equivalent Course(s): PHIL 24098

ECON 12410. Pathways in Economics. 100 Units.
This program introduces students to the approaches to economic research and experimentation that make UChicago a world leader in the field. Full-time lecturers in the Department of Economics teach classes on topics in macroeconomics, microeconomics, game theory, and field experiments, which are supplemented by guest lectures delivered by preeminent UChicago faculty in economics and other departments whose research applies the tools and insights of the field in new and exciting ways. Participants can apply what they hear about in lectures during small group discussion sections facilitated by a team of outstanding current UChicago students, as well as in labs and site visits to locations such as the Federal Reserve Bank of Chicago.

ECON 12411. Pathways in Economics C. 100 Units.
This program introduces students to the approaches to economic research and experimentation that make UChicago a world leader in the field. Full-time lecturers in the Department of Economics teach classes on topics in macroeconomics, microeconomics, game theory, and field experiments, which are supplemented by guest lectures delivered by preeminent UChicago faculty in economics and other departments whose research applies the tools and insights of the field in new and exciting ways. Participants can apply what they hear about in lectures during small group discussion sections facilitated by a team of outstanding current UChicago students, as well as in labs and site visits to locations such as the Federal Reserve Bank of Chicago.

ECON 12412. A Survey of Chicago Economics. 50 Units.
This two-week program will provide an introduction to UChicago-style, rigorous economics education; it is open only to approved visiting third-year students from Universidad Panamericana. Led by a team of full-time lecturers from the Department of Economics, this course will explore topics in four foundational areas: price theory, game theory, experimental economics, and macroeconomics. Participants will also develop skills that will prepare them for further graduate study or other professional pursuits, such as interviewing, networking, and academic and professional communications. Evening and weekend residential program activities will enable students to experience American life and culture and explore the vibrant city of Chicago. Throughout the program, students will have the opportunity to practice both academic and informal spoken English.

ECON 12413. A Survey of Chicago Economics and its Business Applications. 100 Units.
This two-week program will provide an introduction to UChicago-style, rigorous economics education, as well as its business applications. Fulltime lecturers in the Department of Economics will explore topics in four foundational areas: price theory, game theory, experimental economics, and macroeconomics. Evening and weekend residential program activities will enable students to experience American life and culture and explore the vibrant city of Chicago. Throughout the program, students will have the opportunity to practice both academic and informal spoken English.

ECON 13000. Introduction to Money and Banking. 100 Units.
The course focuses on monetary policy and central bank's attempts to stabilize prices and promote maximum sustainable economic growth. Topics include the structure of the Federal Reserve, the conduct of monetary policy, the term structure of interest rates, risk valuation, management of banking, and financial crises.

ECON 13110. Household Finance: Theory and Applications. 100 Units.
This course will examine the choices households make about important financial decisions and how these individual choices can impact the aggregate economy. Each week, basic predictions from economic theory will be discussed and compared with empirical findings. Topics will include: asset market participation and household portfolio choice; human capital and student loans; housing and mortgages; retirement planning; credit card debt;
payday loans; and the gig/sharing economy. Focus will also be placed on government policies affecting these topics, including so-called household financial engineering, the creation of Government Sponsored Enterprises (GSEs) like "Fannie" and "Freddie," and regulatory agencies like the Consumer Financial Protection Bureau (CFPB). The course will provide an introduction to structural modeling for conducting policy counterfactuals. Assessment will be based on problem sets, a midterm and a final. These problem sets will require students to work in R, Stata or other statistical package of the student's choice (with permission of instructor).
Equivalent Course(s): PBPL 28528

ECON 13200. Introduction to Macroeconomic Crises. 100 Units.
This course studies macroeconomic crises within the standard macroeconomic framework. The course introduces students to long-run growth and business cycle fluctuations and analyzes recent events such as the 2008 financial crisis, Euro-currency crisis and the 2020 pandemic as distinct macroeconomic phenomena. In particular, we will cover areas including systemic risk in the banking sector, monetary and fiscal policy, sovereign default, labor market consequences and theories of labor determination and models of infection risk. We will also study methodological innovation in macroeconomics, i.e., how macroeconomists have adapted their theory and models to explain these particular episodes.

ECON 13300. Introduction to the Macroeconomics of Monetary and Fiscal Policy. 100 Units.
This course examines monetary and fiscal issues in the macroeconomy. The first part of the course will focus on long-run topics in monetary economics, such as the nature of a monetary economy, inflation, the quantity theory of money, and the welfare cost of inflation. The second part of the course will focus on the macroeconomic implications of government expenditure, supply side economics, the Laffer curve, and the Ricardian equivalence theorem. An effort will be made to tackle these issues within unified and simple dynamic frameworks.

ECON 13310. Introduction to Macroeconomic Analysis: A Data Driven Approach. 100 Units.
This course offers a comprehensive exploration of neoclassical macroeconomic models, designed for students who have previously studied the principles of macroeconomics. The course is divided into five key modules: (i) economic growth and production, (ii) consumption and savings, (iii) government finances, (iv) money and the price level, and (v) unemployment. Throughout each module, we extensively utilize relevant data to enhance the understanding of theoretical concepts. By the end of the course, students will not only possess the ability to interpret macroeconomic news and articles but also analyze policies through a model-based framework.

ECON 14000. Introduction to Labor Economics. 100 Units.
This course is an introduction to labor economics with an emphasis on applied microeconomic theory and empirical analysis. Topics to be covered include: labor supply and demand, taxes and transfers, minimum wages, immigration, human capital, creativity over the lifecycle and unemployment. For each topic we will describe the basic economic framework used in the analysis, analyze associated cases of study and drawn conclusions about what we have learned. Most of the examples will be taken from U.S. labor data and special attention will be given to randomized trials and experimental methods to infer causality.

ECON 14010. Introduction to Intergenerational Mobility. 100 Units.
The gap between top income percentiles and bottom income percentiles has increased in many countries, including the US, over the last decades. Income distribution is placed back at the center of economics and has become a prominent part of media and policy discussions. Empirical findings suggest that there exists a positive correlation between inequality and immobility. To provide deeper insight in mechanisms underlying the latter phenomenon the course covers theories of persistent inequality and intergenerational mobility. Students in this course will learn about the fundamental theories of distributive justice, theory of measures of mobility and persistence, empirical evidence on intergenerational mobility, theories of intergenerational mobility. Assignments include regular class participation and several home assignments (in particular, students will be asked to choose 1 paper to master and to write an essay on it; there will be also offered sets of problems and practical questions). Equivalent Course(s): PBPL 23420

ECON 14020. Labor Markets: A Global Perspective. 100 Units.
In this course we will explore standard models that form the core of labor economics including labor supply, labor demand, job search models, wage setting, discrimination, and migration. For each topic we will then examine empirical applications of these models with a focus on middle and low-income countries. We will discuss how these traditional models are useful, or not, in understanding labor market outcomes in these settings and how they can be expanded to better capture relevant features of labor markets outside high-income countries. Equivalent Course(s): PBPL 25640

ECON 14200. Applied Price Theory: Individual and Family. 100 Units.
TBD

ECON 14270. Applied Price Theory: Individual and Family. 100 Units.
TBD

ECON 14520. Economics of Gender in International Contexts. 100 Units.
In this class, students will engage basic issues, conflicts, and innovative field research in economics of gender in international contexts. In particular, we will review theoretical foundations, data and methods of research, and a review of recent work in international research related to economics of gender. At the end of the course, you
will have a suite of research approaches, topics, and methods, to investigate gender differences in a variety of economic outcomes and contexts.
Equivalent Course(s): GNSE 22520

ECON 14530. Gender and Policy. 100 Units.
This course seeks to familiarize undergraduate students with historic and current policy in the US and in other developed countries concerning various aspects of women's lives at work and in the home. We will begin by discussing the reasons for the rise in female labor force participation between the 50s and the 80s. We will discuss the role of male deployment in WWII, the role of technological change in both fertility planning and in the invention of household appliances, and the role of changes in the demand for skilled labor. With this backdrop in mind, we will discuss the historic development of maternity leave policies in many European countries and evaluate the impact of these developments on female labor force participation. We will then turn to understanding the relative stagnation in female advancement in the past twenty-five years. The focus of this portion of the course will be to summarize recent trends in female labor force participation.
Equivalent Course(s): PBPL 24520, GNSE 20109

ECON 14810. Evolution and Economics of Human Behavior. 100 Units.
This course explores how evolutionary biology and behavioral economics explain many different aspects of human behavior. Specific topics include evolutionary theory, natural and sexual selection, game theory, cost-benefit analyses of behavior from an evolutionary and a behavioral economics perspective, aggression, power and dominance, cooperation and competition, biological markets, parental investment, life history and risk-taking, love and mating, physical attractiveness and the market, emotion and motivation, sex and consumer behavior, cognitive biases in decision-making, and personality and psychopathology.
Equivalent Course(s): PSYC 27950, CHDV 37950, CHDV 27950, PSYC 37950

ECON 15010. Investments: From Economics to Finance. 100 Units.
This course studies finance and investments through the lens of economic equilibrium methods. We look at how the general equilibrium framework in economics gives rise to the factor pricing models in finance, the no-arbitrage framework in economics gives rise to the option pricing models in finance, and the Nash equilibrium framework in economics gives rise to the microstructure trading models in finance. Trillions of dollar worth of financial products ride on these financial models, and we trace the path from the basic models of equilibrium in economic theory to these applied models in finance that have found immense use in practice. The course combines a theoretical framework with applied analysis. Topics covered include: basics of general equilibrium with uncertainty, mean-variance utility, portfolio optimization, capital asset pricing model, no-arbitrage equilibrium, fundamental theorem of asset pricing, binomial option pricing, Black-Scholes-Merton options theory, Bayes Nash equilibrium, Kyle and Glosten-Milgrom models of trading.

ECON 15020. Trading: From Game Theory to Finance. 100 Units.
This course studies trading in financial markets through the lens of game theory and asymmetric information. Trading models are at the heart of financial markets, and we trace the path from basic models in game theory and equilibrium economics to applied trading models in finance that have found immense use in practice. We look at how the asymmetric information framework gives rise to market microstructure trading, equilibrium tatonnement process gives rise to arbitrage trading, general equilibrium framework gives rise to beta-based trading, model uncertainty gives rise to alpha-based trading, and event uncertainty gives rise to option trading. The course combines a theoretical framework with applied analysis. Topics covered include: information structures, Bayesian probability, Blackwell's theorem, basics of rational expectations equilibrium, Bayes Nash equilibrium, limit order books, bid-ask spread formation, asymmetric information models of microstructure trading, PIN model, capital asset pricing model, beta and index fund trading, alpha and hedge fund trading, speculative trading with options, high-frequency trading, arbitrage and behavioral trading models.

ECON 15500. Introduction to Development Economics. 100 Units.
Global poverty is one of the fundamental problems facing humanity. In this course we will try to understand the economic lives of the global poor, why they are stuck in poverty, and what evidence exists on what works and what doesn’t in the fight against poverty. We will take a primarily micro-economic perspective on poverty which focuses on individuals, households, markets, and governments. We will structure our investigation using economic models and statistical methods, and consider questions related to consumption, health, education, risk, credit, and savings. We will also study the role of government provision of services and politics in developing countries. We will end with taking a historical and big-picture perspective of development.

ECON 15510. An Introduction to Development Economics With a Focus on Data. 100 Units.
Why do some countries grow faster than others? Why do children in Vietnam learn twice as much as Peruvian children in a year despite their governments spending similar amounts on education? Why do farmers not adopt new technologies that generate higher yields? What is the most effective way to improve health and women’s empowerment in middle and low income countries? We will examine these questions by applying the tools of economics to the best available data. In addition to an introduction to development economics, students will get a grounding in different data analysis techniques and how they are applied in practice. They will learn how to critically evaluate data analysis and spot potential biases: is the outcome variable likely to be subject to reporting bias? is there potential selection bias or attrition bias? What techniques are best adapted to addressing these potential biases in the data? In the final part of the course we will cover the role of the International Financial
ECON 16020. Introduction to Public Sector Economics. 100 Units.  
The course studies public policy issues in the world from both micro- and macroeconomic perspectives. Covered topics include tax, antitrust, and trade policies (micro) as well as fiscal and monetary policies (macro). International case studies will be discussed in comparison to the US experiences (e.g., industrial policies and development in Asia, exchange rate policies in Latin America, the currency union in Europe, and ECB’s monetary policy).

ECON 16510. Water: Economics, Policy and Society. 100 Units.  
Water is inextricably linked to human society. While modern advances in technology and new economic and policy mechanisms have emerged to address water stressors from overconsumption, development pressures, land use changes and urbanization, challenges continue to evolve across the globe. These problems, while rooted in scarcity, continue to become more complex due to myriad human and natural forces. In addition to water quality impairments, droughts and water shortages persist, putting pressure on agricultural production and urban water use, while the increased frequency and severity of rainfall and tropical storms, already being experienced globally, are only projected to grow in intensity and duration under climate change. Students will explore water from the perspective of the social sciences and public policy, with attention on behavioral dimensions of water use and water conservation. Qualitative and quantitative approaches to examining how humans use and affect water will be considered, with particular applications to Chicago and the Great Lakes region.
Equivalent Course(s): CHST 21310, LLSO 21310, GLST 21310, CEGU 21310, ENST 21310, PBPL 21310

ECON 16520. Economics and Environmental Policy. 100 Units.  
This course combines basic microeconomic theory and tools with contemporary environmental and resources issues and controversies to examine and analyze public policy decisions. Theoretical points include externalities, public goods, common-property resources, valuing resources, benefit/cost analysis, and risk assessment. Topics include pollution, global climate change, energy use and conservation, recycling and waste management, endangered species and biodiversity, nonrenewable resources, congestion, economic growth and the environment, and equity impacts of public policies.
Equivalent Course(s): CEGU 21800, ENST 21800

ECON 16530. Applied Research in Environment, Development and Health. 100 Units.  
This course engages students in collaborative research on topics that connect the environment, health, agriculture and development. After identifying a shared theme, students will design and commence a plan of research with the goal of producing content including reading lists, research and policy briefs, data visualizations, maps, blog posts and web content, as well as creative media such as podcasts. Students will also apply their findings to programming surrounding the Frizzell Speaker and Learning Series for 2020-21 by identifying possible keynote speakers and curating other events. Students are strongly encouraged but not required to enroll in both the autumn and winter courses to gain the full benefit of a sustained research experience.
Equivalent Course(s): GEOG 21710, GLST 21700, ENST 21700, PBPL 21700

ECON 16540. Urban Spaces and Unnatural Disasters: Humans-Nature Connections in Cities. 100 Units.  
A natural disaster is thought of as an event or series of events caused by the Earth’s natural forces and processes. These include hurricanes, floods, droughts, wildfires, earthquakes, and other events provoked by the earth’s processes. But what about the outcomes of such disasters? How do social, economic and spatial conditions affect the impact of natural disasters on the population? What role do humans play in these events and the outcomes? How does human activity and public policy lead to or mitigate large one-time events like oil spills, as well as chronic conditions like deforestation, pollution, and climate change? Are humans part of the natural system in this context or is the human influence considered “unnatural”? This course explores the human relationship to such disasters, including humans as contributors to the severity and extent of such disasters through energy consumption, land use, public policy and other behaviors, and the response by humans to disasters including mitigation, adaptation, and policy formation and implementation. Students will explore how historic policies both created and mitigated environmental vulnerabilities, and how these risks are distributed across the population. Students will study the role of contemporary human behavior in outcomes related to the environment and natural resources through a series of seminal and current readings, and an independent yet collaborative research project using mixed methods from the social sciences.
Equivalent Course(s): GLST 21750, PBPL 21750, ENST 21750, CHST 21750, CEGU 21750

ECON 16710. Education and Economic Development. 100 Units.  
This course covers policy issues related to education in developing contexts. We will analyze education policies and reforms, develop skills to be a critical consumer of relevant research on each topic, and examine implications of the findings to policy and practice. Topics include discrimination and inclusion in education, understanding factors that influence educational decisions, provision of basic needs in schools, teacher pay and incentives, education in emergency settings, and school choice.
Equivalent Course(s): EDSO 28350, PBPL 28350
ECON 16950. Conflict: Root Causes, Consequences and Solutions for the Future. 100 Units.
The goals of this course are to introduce you to key concepts in the study of conflict, and to help you develop the analytical skills you need to understand and assess key arguments advanced in this arena. Drawing primarily on economics and political science, as well as psychology, we will seek to understand: Why do human beings engage in acts of violence? How can armed groups compel atrocities? How do we prevent cycles of violence, and aid countries recovering from war? Specifically: We will examine the role of economic shocks and ethnic divisions on civil war. We will also discern whether similar factors explain the rise of terrorism. In addition, we will study the consequences of conflict on socio-economic development, and examine the role of foreign aid and post-conflict reconciliation in helping countries recover from conflict. The class will examine these questions while focusing on analytical skills needed to understand cutting edge research in this area. Thus a major emphasis of the course is on learning how to think critically about empirical evidence, and learning the methods used in quantitative empirical analysis, such as fixed effects models, differences-in-differences research designs, and instrumental variables estimation. It is ideal for students who want to learn substantively about conflict while developing an understanding of the methodology used to produce key empirical findings.
Equivalent Course(s): PBPL 28750, PLSC 28750

ECON 17100. Introduction to International Trade. 100 Units.
This course covers international economics with an emphasis on international trade. The basic theories of international trade are introduced and used to analyze welfare and distributional effects of international trade, government policies, and technology diffusion. In addition, this course also discusses the main empirical patterns of international trade and international investment.

ECON 17110. International Monetary Systems. 100 Units.
This course studies the principles of monetary policy across international markets, global banking markets, and optimum currency areas and their impact on and from business cycles and economic development. Students will be introduced to simplified theoretical models with which to analyze data, relevant empirical findings, and policy decisions. Practice is provided in understanding recent international economic events and current policy topics.

ECON 17700. Introduction to Health Economics. 100 Units.
This course will introduce students to the economics of health care provision and payment. We will use methods from microeconomics to investigate how different aspects of the health care system function and to assess the implications for different policies designed to improve that functioning. We will use economic tools and techniques from the sub-disciplines of information economics, industrial organization, labor economics, public economics, behavioral economics, and decision theory to think about these questions. The primary goals of the course will be to (i) master different economic techniques in the context of health care markets and (ii) learn about the specific institutional details and policies relevant to those markets.

ECON 17710. Health Care Markets and Regulation. 100 Units.
This course analyzes the economics of health care markets and the way regulations impact those markets. We will study the unique institutional arrangements found in the health care sector (primarily, though not exclusively, in the United States) and examine how market forces manifest themselves in this setting. We will consider the behavior of health care providers, insurers' roles both as intermediaries and risk managers, patients' health care demand, and geographic differences in medicine. The study of government regulations, including their theoretical and empirical impacts on health care markets, will be integrated throughout these topics.
Equivalent Course(s): PBPL 28335, PPHA 37820

ECON 18010. Introduction to Managerial Microeconomics. 100 Units.
This course presents several classic microeconomic models applicable in business contexts. The topics covered include self-selection, commitment, product differentiation, matching, and mechanism design, among others. The theoretical insights of each model are analyzed. Real-world applicability is discussed using practical examples. Students are required to write short papers applying the models presented in the course to real-world situations in the context of business.

ECON 18020. Introduction to Applied Empirical Industrial Organization. 100 Units.
In this course, students will learn how to apply techniques and models developed in industrial organization and law and economics to important questions that arise in litigation and government regulation. We will be guided and informed by pure theory underlying industrial organization and implement it in a world of partial information, incomplete data, and even contradictory data, among other complexities. Students will learn how to develop inferences by applying the models to real world cases and data - i.e., extracting the most information possible from partial, imperfect data, frequently with missing values or poorly-measured data points. These fact patterns will not always result in an incontrovertible answer. Thus, students will be expected to identify and express the "best argument for" and "best argument against" the questions posed to them. This means that students will be expected to (i) see theory as a guideline to assess the relevant facts, circumstances, and data, (ii) reach a view, (iii) succinctly express that view in writing and acknowledge and address contrary theory and empirical results. Students will also see actual expert reports and/or white papers that have been prepared in actual disputes and investigations. Part of the grade will be based on an "expert report" written by the students in small teams.
ECON 19000. Economics for Everyone: Micro. 100 Units.
The field of economics has generated a powerful set of insights which have fundamentally shaped the modern world. Because modern economics puts such a heavy stress on mathematical rigor, the most interesting economic ideas often get pushed to the background. In this course, we will explore these big economic ideas, without the math. Our goal is to make the beauty and power of economic thinking available to everyone. We will discuss what it means to think like an economist, how you can use economic thinking to make the world a better place (or to take advantage of your friends and enemies, if you prefer), and also how sometimes thinking like an economist can get you into trouble.

ECON 19100. Economics for Everyone: Macro. 100 Units.
This course explores the big ideas in macroeconomics in a way that is enjoyable and accessible, with minimal reliance on mathematics. The goal is to provide an introduction to macroeconomic issues for people who have never before studied macroeconomics (and who might never study it again), so that they can understand and contribute to ongoing discussions in the news and on social media. We will demystify some of the major macroeconomic questions of our times: Why is there unemployment? Why are some countries poor? What's the big deal about government debt? How high should we set taxes? What gives money and stocks their value? What does the Fed do? And why did all those economists win Nobel Prizes? We will show the fun, interesting, and strange sides of macroeconomics.

ECON 19200. Introduction to Issues and Methods in Microeconomics. 100 Units.
Microeconomics is the study of how agents make optimal choices when facing constraints. The course will start by developing the "Economic Approach" as the basic tool for analysis in economics. We will continue with a model of causal inference, and link it with concepts students have learned in the econometrics course. Then, we introduce the use of experiments as an alternative methodology for the researchers to gather their own data. Finally, we cover some major topics in behavioral economics.

ECON 19300. Introduction to Issues and Methods in Macroeconomics. 100 Units.
We will develop basic tools and methods in economics and study issues in macroeconomics and international trade and finance. The topics we cover include both contemporary and classical issues such as tax incidence and distortions, optimal taxation, inflation, monetary policy, patterns and benefits of trade, and exchange rate determination. The objective of the course is to train students with analytical tools in macroeconomics so that they can understand, analyze, and evaluate various policies and policy proposals. To make the subject matters relevant and practical, students are strongly encouraged to read the Wall Street Journal and the Economist regularly to keep up with current events and controversies.

ECON 19800. Introduction to Microeconomics. 100 Units.
By way of economic theory, applications, and contemporary issues, this course treats (1) the behavior and decision making on the part of individuals, business firms, and governments; and (2) the function of costs, prices, incentives, and markets in the American economy. We discuss contemporary topics (e.g., distribution of income, the environment, education, sports, health care).

ECON 19900. Introduction to Macroeconomics. 100 Units.
By way of theory and public policy applications, this course covers current major domestic and international macroeconomic issues in the U.S. economy, including the determination of income and output, inflation, unemployment, and economic growth; money, banking, and the Federal Reserve System; federal spending, taxation, and deficits; and international trade, exchange rates, and the balance of payments.

ECON 20000-20100-20200-20300. The Elements of Economic Analysis I-II-III-IV.
ECON 20000. The Elements of Economic Analysis I. 100 Units.
This course develops the economic theory of consumer choice. This theory characterizes optimal choices for consumers given their incomes and preferences, as well as the relative prices of different goods. This course develops tools for analyzing how these optimal choices change when relative prices and consumer incomes change. Finally, this course presents several measures of consumer welfare. Students learn how to evaluate the impact of taxes and subsidies using these measures. Completion of ECON 10000 (or ECON 19800) is strongly recommended of students without a prior microeconomics course.

ECON 20100. The Elements of Economic Analysis II. 100 Units.
This course is a continuation of ECON 20000. The first part of this course discusses markets with one or a few suppliers. The second part focuses on demand and supply for factors of production and the distribution of income in the economy. This course also includes some elementary general equilibrium theory and welfare economics.

ECON 20200. The Elements of Economic Analysis III. 100 Units.
As an introduction to macroeconomic theory and policy, this course covers the determination of aggregate demand (i.e., consumption, investment, the demand for money); aggregate supply; and the interaction between aggregate demand and supply. We also discuss economic growth, business cycle, inflation and money. Completion of ECON 19900 is strongly recommended of students without a prior macroeconomics course.
ECON 20300. Elements of Economic Analysis IV. 100 Units.
This is a course in money and banking, monetary theories, the determinants of the supply and demand for money, the operation of the banking system, monetary policies, financial markets, and portfolio choice.

ECON 20010-20110-20210. The Elements of Economic Analysis: Honors I-II-III.
The Elements of Economic Analysis: Honors I-II-III

ECON 20010. The Elements of Economic Analysis I Honors. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. This course is a continuation of ECON 20000/20010. The first part of this course discusses markets with one or a few suppliers. The second part focuses on demand and supply for factors of production and the distribution of income in the economy. This course also includes some elementary general equilibrium theory of welfare economics.

ECON 20110. The Elements of Economic Analysis II Honors. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. As an introduction to macroeconomic theory and policy, this course covers the determination of aggregate demand (i.e., consumption, investment, the demand for money); aggregate supply; and the interaction between aggregate demand and supply. We also discuss economic growth, business cycle, inflation and money. Completion of ECON 10200 (or ECON 19900) is strongly recommended of students without a prior macroeconomics course.

ECON 20210. The Elements of Economic Analysis III Honors. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. As an introduction to macroeconomic theory and policy, this course covers the determination of aggregate demand (i.e., consumption, investment, the demand for money); aggregate supply; and the interaction between aggregate demand and supply. We also discuss economic growth, business cycle, inflation and money. Completion of ECON 10200 (or ECON 19900) is strongly recommended of students without a prior macroeconomics course.

ECON 20310. Elements of Economics Analysis 4: HONORS. 100 Units.
The scope of the honors section is the same as the standard section, but it covers material at greater depth and using more sophisticated mathematical methods. This is a course in money and banking, monetary theories, the determinants of the supply and demand for money, the operation of the banking system, monetary policies, financial markets, and portfolio choice. Prerequisite(s): ECON 20200 or 20210

ECON 20510. Political Economy. 100 Units.
Political Economy bridges the gap between economics and politics by showing how governments and political institutions are composed of people who respond to incentives and whose behavior and choices can be studied through the lens of economics. In this class, we will open a refresher on microeconomics and an introduction to the toolkit of political economy, making sure that the necessary building blocks are in place before building up from the level of the individual and the firm to show how a political-economic equilibrium can be achieved. The final goal is to demonstrate that economic and political issues alike can be studied within the same general framework of analysis.

ECON 20520. Formal Models of Political Economics. 100 Units.
Why do the Republicans and the Democrats almost always ended up choosing moderates as their party nominees in presidential races? How do “checks and balances” such as a legislative committee’s power to set the agenda or a president’s power to veto a bill affect policy outcomes? What leads to coalition building in a legislature and how does it affect the result of legislative bargaining? When can a legislature optimally delegate its power to a bureaucratic agency who has its own interests and agenda? To answer questions like these, we study formal models of political economics. Such models examine explicitly the incentives of participants in political processes and generate predictions of their behavior based on such incentives and any confounding strategic considerations. Our approach is largely game theoretical. Familiarity with fundamental game theoretical ideas like the strategic and extensive games, the Nash Equilibrium, and the Subgame Perfect Equilibrium is essential and assumed.

ECON 20700. Game Theory and Economic Applications. 100 Units.
This course introduces the basic ideas and applications of game theory. Topics include models of games in extensive and strategic form, equilibria with randomization, signaling and beliefs, reputation in repeated games, bargaining games, investment hold-up problems, and mediation and incentive constraints.

ECON 20740. Analysis of Collective Decision-Making. 100 Units.
This course develops the theory of collective choice by groups of individuals who may have diverse preferences. We study how, and to what extent, preferences can be aggregated and the extent to which voting systems and elections succeed in aggregating information and preferences. Finally we examine how the design of institutions impacts policy outcomes and why the electoral system may produce suboptimal results.
ECON 20770. Decision and Strategy. 100 Units.
This course provides a formal introduction to game theory with applications in economics. We will study models of how individuals make decisions, and how those decisions are shaped by strategic concerns and uncertainty about the world. The topics will include the theory of individual choice, games of complete and incomplete information, and equilibrium concepts such as Nash equilibrium. The applications will include oligopoly, auctions, and bargaining. The course is appropriate for advanced undergraduates who are interested in a rigorous mathematical approach to understanding human behavior. Equivalent Course(s): ECMA 30770

ECON 20780. Decision and Strategy II. 100 Units.
We continue the formal introduction to decision theory and game theory begun in ECMA 30780, with a specific focus on models of incomplete information. Topics covered include subjective expected utility, Bayesian games, contract theory, and mechanism design. Among the applications we will consider are auctions, collusion, entry deterrence, and strategic communication. The course is appropriate for advanced undergraduates who are interested in a rigorous mathematical approach to decision making in strategic situations. Equivalent Course(s): ECMA 30780

ECON 20900. Econometrics: Honors. 100 Units.
The topics are essentially the same as those covered in ECON 21000, but this foundations course in econometrics gives a more systematic introduction to the application of statistical theory to economic applications. This course is intended for students who are planning to study economics at the graduate level.

ECON 21000. Econometrics A. 100 Units.
Required of students who are majoring in economics; those students are encouraged to meet this requirement by the end of their third year. This course covers the single and multiple linear regression model, the associated distribution theory, and testing procedures; corrections for heteroskedasticity, autocorrelation, and simultaneous equations; and other extensions as time permits. Students also apply the techniques to a variety of data sets using PCs. Prerequisite(s): ECON 20100, STAT 23400, and MATH 19620 (or MATH 20000 or STAT 24300 or MATH 20250)

ECON 21010. Statistical Methods in Economics. 100 Units.
This course provides a solid foundation in probability and statistics for economists. We emphasize topics needed for further study of econometrics in ECON 21020. Topics include elements of probability theory, sampling theory, estimation, hypothesis testing, and an introduction to linear algebra.

ECON 21020. Econometrics. 100 Units.
Required of students who are majoring in economics; those students are encouraged to meet this requirement by the end of their third year. This course covers the single and multiple linear regression model, the associated distribution theory, and testing procedures; corrections for heteroskedasticity, autocorrelation, and simultaneous equations; and other extensions as time permits. Students also apply the techniques to a variety of data sets using PCs.

ECON 21030. Econometrics - Honors. 100 Units.
The topics are essentially the same as those covered in ECON 21020, but this foundations course in econometrics gives a more systematic introduction to the application of statistical theory to economic applications. This course is intended for students who are planning to study economics at the graduate level.

ECON 21031. Econometrics II-Honors. 100 Units.
This course is a continuation of ECON 21030. The topics covered include additional applications of linear regression to descriptive and causal inference. Other topics may include nonlinear models, panel data, quantile regression, time series, the bootstrap, and nonparametric regression. This course is intended for students who are planning to study economics at the graduate level.

ECON 21050. Empirical Methods for Social Science Research. 100 Units.
The goal of the course is to provide basic training in how to analyze and interpret quantitative data. The first part is a description of methods to graph and represent data sets. Emphasis will be given on methods that provide an intuitive sense of empirical relationships, using examples from discontinuity designs and difference-in-differences ("diff in diff"). Then, regression analysis will be covered, explaining how linear regression methods can be used to uncover rich and informative patterns from the data, including nonlinear relationships. Students will be introduced to causality and instrumental variables methods. The course will use a variety of empirical examples from published papers. Students will be asked to experiment with data sets and apply the methods by themselves.

ECON 21100. Econometric B. 100 Units.
ECON 21100 or 21110 or 21130 or 21150 may be used as an economics elective, but only one may be used toward degree requirements. This course provides students with a basic understanding of how econometrics, economic theory, and knowledge of institutions can be used to draw credible inferences on economic relationships. Topics include multivariate linear regression, causal inference, omitted variables bias, fixed and random effects models, simultaneous equation models, the propensity score, and discrete choice models. Students have the opportunity to apply these techniques to empirical questions in industrial organization, as well as in environmental, labor, and public economics.
ECON 21110. Applied Microeconometrics. 100 Units.
This course will cover a broad set of applications in labor economics, public economics, industrial organization, economics of education, environmental economics, and development economics. There will be a strong focus on how economic theory, institutional details, and experiments can be used to draw causal inferences on economic relationships. There will be emphasis on applying a number of commonly used microeconometric methods to economic data; including the linear regression model, fixed and random effects models, instrumental variables, and discrete choice models. When interpreting the empirical results, we will also discuss the importance of omitted variables bias and measurement error.

ECON 21150. Topics in Applied Econometrics. 100 Units.
This course builds on the theoretical foundations set in Econ 21030 and explores more advanced topics pertinent to modern economic applications. While the course content may change from year to year according to student and instructor interests, some potential topics are panel data methods, treatment effects/causal inference, discrete choice/limited dependent variable models, demand estimation, and selected topics in economic applications of supervised and unsupervised learning algorithms. The course will involve analytically and computationally intensive assignments and a significant project component.

ECON 21200. Time Series Econometrics. 100 Units.
This course focuses on theory, and covers a broad range of topics, both mathematical and statistical, on stationary time series models in time and frequency domains. The models include ARMA, VAR, ARCH/GARCH and their variants. It also covers nonstationary time series models with unit roots and cointegration, and the theories and methodologies to estimate and test them statistically.

ECON 21300. Data Construction and Interpretation in Economic Applications. 100 Units.
In this course we will explore the process of extracting insights from real-world data. What can one learn from a particular data set? How do you know what sets of tools will be “right” for the job? How can you increase your degree of confidence that the inferences you are drawing are correct? How can you best communicate the insights you glean from the data? Unlike standard econometrics courses, this class emphasizes hands-on work with actual data sets rather than the development of sophisticated tools and techniques (which are also useful, you just won’t learn them here!).

ECON 21410. Computational Methods in Economics. 100 Units.
This course introduces the empirical and computational techniques necessary for numerical estimation and simulation in economics. Through examples in economics, the course covers topics such as optimization, function approximation, and monte carlo techniques. Emphasis will be placed on developing effective programming and research practices. The course is structured through a series of applications in such topics as segregation, occupational choice, and repeated games. The course will be taught in R and STATA. Though helpful, no previous experience with R or STATA is required.

ECON 21730. Applied Behavioral Economics. 100 Units.
This class covers recent work in behavioral economics. Topics include discrimination, social pressure, social norms, identity and gender. Applications will cover a wide range of fields, including labor economics, finance, and political economy.

ECON 21740. Behavioral Economics and Experiments. 100 Units.
This is a hands-on course in behavioral economics. Basic concepts of preferences, traits, and behavioral biases are reviewed that link economics and psychology. Methods for eliciting traits and preferences will be taught and implemented in actual lab experiments. Grade will be determined by reports and quality of lab work.

ECON 21800. Experimental Economics. 100 Units.
This course provides the necessary tools to be an avid consumer of the experimental literature and instructs students on how to become a producer of that literature. Topics include a summary of recent experimental findings and details on how to gather and analyze data using experimental methods.

ECON 21830. Social Neuroscience. 100 Units.
Humans are intensely social animals. Our lives are intertwined with other people, and our well-being depends on others. Social neuroscience examines how the brain mediates social cognition and behavior. It spans diverse species, disciplines (evolutionary biology, neuroscience, anthropology, psychology, behavioral economics, sociology, and political science), and levels of analysis across the biological organization. Social neuroscience provides an overarching paradigm to investigate social cognition and behavior and to determine where we as a species fit within a broader biological context. A wide range of topics will be examined, including social connections and friendship, sex, mating and aggression, cooperation and social preferences, social and environmental influences on decision-making and behavior, empathy, social contagion, and group coalitions. Interdisciplinary analyses, by integrating approaches from social sciences and biological sciences, significantly expand our knowledge and have the potential to improve our social and living conditions. Equivalent Course(s): NSCI 21000, HLTH 22350, PSYC 22350, CHDV 22350, BIOS 24137

ECON 22020. Economic Change in China, circa 1800-2000. 100 Units.
An overview of Chinese economic development since the end of the eighteenth century, with attention to its social, political, and environmental ramifications. Topics in the first part of the course include the Qing property-rights system and its implications for rural society; merchant organization; internal trade; migration; and the
empirical political economy. This section of the course concludes with explanations of the economic and other crises that caused late-nineteenth- and early-twentieth- century China to be called the “land of famine.” Part two covers changes in China’s relationship to the outside world, the beginnings of industrialization, and the complex patterns of regional growth and stagnation up through the victory of the Communist Party in 1949. Part three looks at both Maoist (1949-1976) and post-Maoist development, emphasizing the economic consequences of institutional changes, industrialization and urbanization (especially since 1978), and the evolving tensions with a so-called “socialist market economy.” Mostly lecture, with some class time for discussions, plus an online discussion board; midterm, final, and two short papers (5-7 pages each).
Equivalent Course(s): EALC 24621, HIST 24611

ECON 22030. The Chinese Economy. 100 Units.
This course provides an overview of the Chinese economy, with two main focuses. First, we will review the significant reforms that happened in China in the past four decades, which fundamentally reshaped the modern China as we see today. Second, we will discuss some of China’s key political and economic institutions, and their implications on China and the rest of the world. Throughout the course, special emphasis will be given to the role of the state in China’s growth experience, at both the central- and local-levels.
Equivalent Course(s): PPHA 35585, PBPL 25585

ECON 22410. UChicago Economics: The People and the Seminal Ideas. 100 Units.
Econ 24/20 or Econ 22410 may be used as an economics elective, but only one of the two may be used toward economics major requirements. This course will trace in general the history and evolution of economic thought as an intellectual discipline, from the Middle Ages through Adam Smith and the Classical dominance in the 18th and 19th centuries, to the neoclassical period and alternative schools, and then the rise of Keynesian economics and the emergence of the Chicago School of economics in the 20th century. With this background and context, the focus will turn to the theoretical and empirical contributions of important historical UChicago figures such as Veblen, Knight, Hayek, Friedman, Stigler, Coase and Becker as well as the seminal ideas of contemporary scholars, including several Nobel laureates, in the Department, other academic units on campus, and economists elsewhere with deep Chicago roots.

ECON 23000. Money and Banking. 100 Units.
This course covers economic theories and topical issues in money and banking. We discuss such “traditional” topics as the quantity theory, the Phillips curve, and the money creation process. We also investigate models of bank runs and financial crises, the tradeoff between rules and discretion, and the New Macroeconomic Synthesis of New Classical. Other topics include New Keynesian approaches to modeling money and monetary policy, practical and institutional issues in European and U.S. monetary policy, and the 2008 financial crisis.

ECON 23040. Cryptocurrencies. 100 Units.
This course will cover both the computer science aspects and economic aspects of cryptocurrencies. Topics to be discussed will include network and system building blocks, consensus protocols, cryptographic algorithms, security and privacy issues, pricing of cryptocurrencies, bubbles, monetary policy issues and regulatory concerns.
Equivalent Course(s): CMSC 23280

ECON 23200. Topics in Macroeconomics. 100 Units.
This course focuses on the use of dynamic general equilibrium models to study questions in macroeconomics. Topics include long-run growth and dynamic fiscal policy (Ricardian equivalence, tax smoothing, capital taxation), labor market search, industry investment, and asset pricing. On the technical side, we cover basic optimal control (Hamiltonians) and dynamic programming (Bellman equations).

ECON 23410. Economic Growth. 100 Units.
The process of economic growth and the sources of differences in economic performance across nations are some of the most interesting, important and challenging areas in modern social science. You cannot travel or read the news without wondering why differences in standards of living among countries are so large. The primary purpose of this course is to introduce undergraduate students to these major issues and to the theoretical tools necessary for studying them. The course therefore strives to provide students with a solid background in dynamic economic analysis, as well as empirical examples and data analysis. We will cover models at an abstract and advanced level. You must have the degree of mathematical maturity associated with the concepts of functions, derivatives, integrals, Taylor series, optimization, ordinary differential equations. Some basic knowledge on regression analysis is also required.

ECON 23620. Inequality: A Perspective from Macroeconomics. 100 Units.
This is an advanced undergraduate course on inequality from a macroeconomic perspective. We will learn how to measure, model, and evaluate the distributional consequences of economic policies and institutions. There is a heavy empirical component: We will study the key features of the distributions of consumption, income, wealth, and leisure, and how these distributions evolve over time and over the lifecycle. There is a heavy theoretical component: We will learn about the benchmark macroeconomic models that can be used to generate predictions about these distributions. There is a heavy computational component: We will learn how to solve heterogeneous agent models on a computer and compare model predictions with the data. Students should be familiar with a programming language such as Matlab, Python, Julia, Fortran, or C and with a statistical package such as Stata or R.
ECON 23950. Economic Policy Analysis. 100 Units.
Building on the tools and methods that are developed in the core courses, this course analyzes fiscal and monetary policy and other topical issues. We use both theoretical and empirical approaches to understand the real-world problems.

ECON 24000. Labor Economics. 100 Units.
Topics include the theory of time allocation, the payoffs to education as an investment, detecting wage discrimination, unions, and wage patterns. Most of the examples are taken from U.S. labor data, although we discuss immigration patterns and their effects on U.S. labor markets. Some attention is also given to the changing characteristics of the workplace.

ECON 24200. Topics: Microeconomics Family. 100 Units.

ECON 24270. Topic: Applied Price Theory: Individual and Family. 100 Units.
TBD

ECON 24450. Inequality and the Social Safety Net: Theory, Empirics, and Policies. 100 Units.
This course will introduce students to key economic and conceptual issues surrounding inequality and the social safety net. We will study the theoretical underpinnings and empirical analysis of the social safety net, focusing on the effects of social insurance and public assistance programs on individual and societal outcomes. After studying models of the insurance-incentive tradeoff, we will apply these models and econometric strategies to the empirical analysis of social safety net programs. We will study how social safety net programs interact with labor markets, specifically human capital investment and work decisions, and how they affect long-term outcomes such as income, health, well-being, and inequality. Students will learn how to analyze the tradeoffs involved in social safety net programs and will learn the current state of evidence on these programs.

ECON 24720. Inequality: Origins, Dimensions, and Policy. 100 Units.
For the last four decades, incomes in the United States and across the globe have grown more unequal. That fact has attracted worldwide attention from scholars, governments, religious figures, and public intellectuals. In this interdisciplinary course, participating faculty members drawn from across the University and invited guest speakers will trace and examine the sources and challenges of inequality and mobility in many of its dimensions, from economic, political, legal, biological, philosophical, public policy, and other perspectives. This course is part of the College Course Cluster program: Inequality.
Equivalent Course(s): PBPL 28920, BPRO 28900

ECON 25000. Introduction To Finance. 100 Units.
This course develops the tools to quantify the risk and return of financial instruments. These are applied to standard financial problems faced by firms and investors. Topics include arbitrage pricing, the capital asset pricing model, and the theory of efficient markets and option pricing.

ECON 25100. Financial Economics; Speculative Markets. 100 Units.
This course focuses on the description, pricing, and hedging of basic derivative claims on financial assets. We study the characteristics, uses, and payoffs of a variety of contracts where the underlying claims include commodities, foreign currencies, bonds, stocks, or stock indices. We examine contracts such as options, swaps, and futures contracts. We use a unified approach (the technique of portfolio replication) to study pricing of these claims. Students also gain an understanding of strategies for hedging the risks inherent in holding these derivative claims.

ECON 25130. Behavioral Finance. 100 Units.
This course is designed to give students an overview of psychological biases in financial decision-making and examine the impacts of these biases in financial markets. It will also introduce students to behavioral and experimental methodologies--both in the lab and in the field--used in finance. Topics include: non-expected utility theories under risk and ambiguity, biases in probabilistic judgment, framing, loss aversion, self-control and non-exponential discounting, mental accounting and herding.

ECON 25200. Development Economics and Data Analysis. 100 Units.
Why do some countries grow faster than others? Why do farmers not adopt new technologies that generate higher yields? What is the most effective way to improve health, education and women's empowerment in middle and low income countries? We will examine these questions by applying the tools of economics to the best available data. In addition to mastering the economic literature on development economics, students will learn applied econometric techniques and how to apply them in practice. They will learn how to critically evaluate data analysis and spot potential biases: is the outcome variable likely to be subject to social desirability bias? is there potential selection bias or attrition bias? What techniques are best adapted to addressing these potential biases in the data? In the final part of the course we will cover the role of the International Financial Institutions (the IMF and World Bank) in international development. The course is designed for undergraduates with a strong interest in economics and data and previous experience using statistical software (such as R or Stata).

ECON 25530. Behavioral Development Economics (Undergraduate) 100 Units.
This course will focus on the intersection of two rapidly growing and recently Nobel Prize-winning fields in economics - development, and behavioral economics. Behavioral development economics brings insights and tools from psychology and behavioral economics to the study of developing economies and poverty more
This course introduces the concept of human capital, its accumulation process, its role in family decisions, and its impact on the economy. Several models are presented and discussed, covering a wide range of topics, including parental altruism, education, bequests, health, fertility, support in old age, income inequality, intergenerational transmission of wealth, specialization, division of labor, and economic growth. The theory is complemented with historical evidence from different countries and periods.

ECON 26530. Environment, Agriculture, and Food: Economic and Policy Analysis. 100 Units.
The connections between environment, agriculture, and food are inherent in our social, cultural, and economic networks. Land use, natural resource management, energy balances, and environmental impacts are all important components in the evolution of agricultural systems. Therefore it is important to develop ways in which to understand these connections in order to design effective agricultural programs and policies. This course is designed to provide students with guidance on the models and tools needed to conduct an economic research study on the intersecting topics of environment, agriculture, and food. Students learn how to develop original research ideas using a quantitative and applied economic policy analysis for professional and scholarly audiences. Students collect, synthesize, and analyze data using economic and statistical tools. Students provide outcomes and recommendations based on scholarly, objective, and policy relevant research rather than on advocacy or opinions, and produce a final professional-quality report for a workshop presentation and publication. This small seminar course is open by instructor consent to undergraduate and graduate students who meet the prerequisites. For consideration, please submit a one-page proposal of research to pge@uchicago.edu.
Equivalent Course(s): ENST 26530, PBPL 26530, PPHA 32510

ECON 26610. The Economics of Cities and Regions. 100 Units.
This course studies business and individual location decisions and how they determine the main economic forces that lead to the existence and performance of cities and regional agglomerations. The course starts by developing a simple theory of cities and its implications for city size, firm productivity, and housing prices. It then studies evidence of the impact of cities on firm and worker productivity, urban amenities, and congestion. We will discuss the problems in measuring these forces, the methodologies to do so, as well as the implications of this measurement for businesses, individuals, and urban policy. We will also study the internal structure of cities, and how to evaluate the effect of new infrastructure or policy on land and housing values as well as on overall welfare. Finally, the course will analyze the role cities and regions play in aggregate economic development.

The global energy and climate challenge is one of the most important and urgent problems society faces. Progress requires identifying approaches to ensure people have access to the inexpensive and reliable energy critical for human development, without causing disruptive climate change or unduly compromising health and the environment. The course pairs technical and economic analysis to develop an understanding of policy challenges in this area. Lecture topics will include the past, present, and future of energy supply and demand, global climate change, air pollution and its health consequences, selected energy technologies such as solar photovoltaics, nuclear power, unconventional oil and gas, and an analysis of theoretical and practical policy solutions in developed and emerging economies.
Equivalent Course(s): BPRO 29200, ENST 28220, PPHA 39905, PBPL 29200

ECON 26800. Energy and Energy Policy. 100 Units.
This course shows how scientific constraints affect economic and other policy decisions regarding energy, what energy-based issues confront our society, how we may address them through both policy and scientific study, and how the policy and scientific aspects can and should interact. We address specific technologies, both those now in use and those under development, and the policy questions associated with each, as well as with more overarching aspects of energy policy that may affect several, perhaps many, technologies.
Equivalent Course(s): PPHA 39201, ENST 29000, PSMS 39000, CHSS 37502, BPRO 29000, PBPL 29000
ECON 26920. Behavioral Economics and Policy. 100 Units.
The standard theory of rational choice exhibits explanatory power in a vast range of circumstances, including such disparate decision making environments as whether to commit a crime, have children, or seek to emigrate. Nonetheless, shortfalls from full rationality seem not to be uncommon, and are themselves, to some extent, systematic. Behavioral economics documents and tries to account for these departures from full rationality. This course looks at areas in which some modification of the traditional rational choice apparatus might most be warranted; these include decisions that unfold over time, involve low probability events, or implicate willpower. To what extent should public policy respond to shortfalls from rationality or concern itself with promoting happiness?
Equivalent Course(s): PBPL 28805

ECON 27000. International Economics. 100 Units.
This course covers international economics with an emphasis on international trade. The basic theories of international trade are introduced and used to analyze welfare and distributional effects of international trade, government policies, and technology diffusion. In addition, this course also discusses the main empirical patterns of international trade and international investment.
Equivalent Course(s): PBPL 27000

ECON 27100. Intro International Finance. 100 Units.
TBD

ECON 27210. Topics in International Macroeconomics. 100 Units.
This course introduces students to a variety of topics in international finance and open economy macroeconomics. Focusing on theory we will consider questions such as: What are the gains from international financial integration? Should nations attempt to “manage” capital flows? Are persistent current account deficits “sustainable”? How do macroeconomic shocks get transmitted across countries? To what extent is the risk of these shocks shared across countries? Should currency area borders coincide with national borders?

ECON 27700. Health Economics and Public Policy. 100 Units.
This course analyzes the economics of health and medical care in the United States with particular attention to the role of government. The first part of the course examines the demand for health and medical care and the structure and the consequences of public and private insurance. The second part of the course examines the supply of medical care, including professional training, specialization and compensation, hospital competition, and enrichment of the determinants and consequences of technological change in medicine. The course concludes with an examination of recent proposals and initiatives for health care reform. Must have completed PPHA 32300 Principles of Microeconomics and Public Policy I or equivalent to enroll.
Equivalent Course(s): PBPL 28300, CCTS 38300, PPHA 38300

ECON 27720. Economics and Regulation of Health Care Markets: Theory and Empirics. 100 Units.
This course explores theoretical and empirical facets of the economics of health care and the industrial organization of the health care sector. The course primarily follows the approach of model-driven empirical work, combining economic modelling with experimental and observational data to test for and quantify theoretical predictions. Topics include asymmetric information, adverse selection, demand for medical care, health care externalities, regulation of health insurance markets, health care outside the US, and public and private incentives for medical research. A particular emphasis is on how government regulation and market incentives interact in generating socially relevant outcomes.

ECON 28000. Industrial Organization. 100 Units.
This course extends the analysis from ECON 20100, with a focus on understanding the way firms make decisions and the effects of those decisions on market outcomes and welfare. The course examines the structure and behavior of firms within industries. Topics include oligopolistic behavior, the problems of regulating highly concentrated industries, and the implementation of U.S. antitrust policy.

ECON 28010. Applied Empirical Industrial Organization. 100 Units.
In this course, students will learn how to apply techniques and models developed in industrial organization and law and economics to important questions that arise in litigation and government regulation. We will be guided and informed by pure theory underlying industrial organization and implement it in a world of partial information, incomplete data, and even contradictory data, among other complexities. Students will learn how to develop inferences by applying the models to real world cases and data - ie, extracting the most information possible from partial, imperfect data, frequently with missing values or poorly-measured data points. These fact patterns will not always result in an incontrovertible answer. Thus, students will be expected to identify and express the “best argument for” and “best argument against” the questions posed to them. This means that students will be expected to (i) use theory as a guideline to assess the relevant facts, circumstances, and data, (ii) reach a view, (iii) succinctly express that view in writing and acknowledge and address contrary theory and empirical results. Students will also see actual expert reports and/or white papers that have been prepared in actual disputes and investigations. Part of the grade will be based on an "expert report" written by the students in small teams.

ECON 28030. Markets and Regulation. 100 Units.
This is an applied industrial organization course that examines economically regulated market structures. We will analyze: a) types of market structures that particularly generate economic regulation; b) common methods
used by regulatory agencies given a particular market structure; and c) models of the supply of and the demand for regulation of markets, with emphasis on maximizing behavior on the part of both suppliers (regulators) and demanders (firms, consumers, political representatives). We will focus on non-financial markets, as financial markets are well-covered in other courses.

Equivalent Course(s): PBPL 28670

ECON 28600. The Economics of Organizations: An Experimental Perspective. 100 Units.
This course offers an introduction to the experimental methodology while at the same time providing the students with up-to-date insights and findings on how to run an organization and how to manage a workforce. Students will learn the basics of the experimental methodology, learn about the most ground-breaking findings in experimental economics related to the functioning of firms, and know the relevant papers and findings in organizational and personnel economics with a particular emphasis on the question of how to set incentives for workers.

ECON 28100. The Economics of Sports. 100 Units.
This is a course in microeconomics that applies traditional product and factor market theory and quantitative analysis to contemporary economic issues in professional and college athletics. Topics include the sports business; market structures and outcomes; the market for franchises; barriers to entry, rival leagues, and expansion; cooperative, competitive, and collusive behavior among participants; labor markets, productivity, and compensation of players; racial discrimination; public policies and antitrust legislation; and financing of stadiums.

ECON 28600. Economic Analysis of Law. 100 Units.
This course involves the application of the choice theory of economics to the opportunities obtainable within different legal environments. The likelihood that a person will choose to return a lost wallet, keep a promise, drive more carefully, or heed the terms in a will is partly a function of the applicable laws and regulations. Alternative rules, under the standard Law and Economics approach, are compared in terms of the economic efficiency of their subsequent outcomes. This efficiency lens of Law and Economics is applied to rules concerning property, torts, contracts, and criminal behavior.

Equivalent Course(s): PBPL 28605

ECON 28620. Crony Capitalism. 100 Units.
The economic system prevailing in most of the world today differs greatly from the idealist version of free markets generally taught in economic classes. This course analyzes the role played by corporate governance, wealth inequality, regulation, the media, and the political process in general in producing these deviations. It will explain why crony capitalism prevails in most of the world and why it is becoming more entrenched also in the United States of America. The course, which requires only basic knowledge of economics, welcomes undergraduates. This is a non-Booth course offered under the ECON 28620 course number. To register, Booth and non-Booth students will request interest by completing an online form https://chicagobooth.az1.qualtrics.com/jfe/form/SV_dg81GBgsXIHT0pg which opens February 13, 2023 at 8:00 am Central Time. Enrollments for all students will be processed in timestamp order starting February 21. Students will be emailed if they are enrolled into or waitlisted for the course. The form will remain open through week 1, and will therefore act as the waitlist for the course. The deadline for enrollment processing will be the end of week 1 of spring quarter. This course will be offered as ECON 28620. Students must complete a poll which will open on Feb. 13, 2023 at 8:00 am Central Time. ECON 28620 is not eligible for pass/fail.

ECON 28700. The Economics of Crime. 100 Units.
This course uses theoretical and empirical economic tools to analyze a wide range of issues related to criminal behavior. Topics include the police, prisons, gang behavior, guns, drugs, capital punishment, labor markets and the macroeconomy, and income inequality. We emphasize the analysis of the optimal role for public policy.

Equivalent Course(s): PBPL 23200

ECON 29200. Issues and Methods in Microeconomics. 100 Units.
Microeconomics is the study of how agents make optimal choices when facing constraints. The course will start with a quick refresher in the "Economic Approach" as the basic tool for analysis in economics. We will continue with a model of causal inference, and link it with concepts students have learned in the econometrics course. Then, we introduce the use of experiments as an alternative methodology for the researchers to gather their own data. Finally, we cover some major topics in behavioral economics.

ECON 29300. Issues and Methods in Macroeconomics. 100 Units.
Using tools and methods in economics, we will study issues in macroeconomics and international trade and finance. The topics we cover include both contemporary and classical issues such as tax incidence and distortions, optimal taxation, inflation, monetary policy, patterns and benefits of trade, and exchange rate determination. The objective of the course is to train students with analytical tools in macroeconomics so that they can understand, analyze, and evaluate various policies and policy proposals. To make the subject matters relevant and practical, students are strongly encouraged to read the Wall Street Journal and the Economist regularly to keep up with current events and controversies.
ECON 29700. Undergraduate Reading and Research. 100 Units.
Students are required to submit the College Reading and Research Course Form. Prerequisite(s): Consent of directors of the undergraduate program

ECON 29800. Undergraduate Honors Workshop. 100 Units.
For details, see the preceding Honors section.