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. The specialization in Data Science provides training in computation and data analysis beyond the basic methods discussed in the empirical methods sequence.

**BA in Economics**

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.

Note: The requirements described below apply to students who matriculated at the University of Chicago in the 2016–17 academic year or later. Any possible exceptions will be noted.

**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 Code</th>
<th>Course 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>MATH 19520</td>
<td>Mathematical Methods for Social Sciences</td>
<td>100</td>
</tr>
<tr>
<td>or MATH 20400</td>
<td>Analysis in Rn II</td>
<td></td>
</tr>
<tr>
<td>or MATH 20800</td>
<td>Honors Analysis in Rn II</td>
<td></td>
</tr>
<tr>
<td>ECON 19800</td>
<td>Introduction to Microeconomics</td>
<td>100</td>
</tr>
<tr>
<td>ECON 19900</td>
<td>Intro To 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 19520 Mathematical Methods for Social Sciences.

**Calculus**

Students who have an interest in the major should take calculus at the highest level for which they qualify. Students may complete MATH 19520 Mathematical Methods for Social Sciences prior to or concurrently with ECON 20000 The Elements of Economic Analysis I. Students must not postpone completion of MATH 19520 Mathematical Methods for Social Sciences beyond concurrent registration with ECON 20000 The Elements of Economic Analysis I.

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 may find it useful to complete MATH 19520 Mathematical Methods for Social Sciences prior to enrolling in the Elements of Economic Analysis sequence.
2. **MATH 15000s**: Students enrolling in the MATH 15000s sequence must complete MATH 15300 Calculus III before enrolling in ECON 20000 The Elements of Economic Analysis I.
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).

Students may satisfy the third quarter of calculus requirement by placement (based on the Calculus Accreditation Examination administered by the College in the summer prior to matriculation). 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 19800 Introduction to Microeconomics and ECON 19900 Intro To Macroeconomics. These courses provide a good overview of basic concepts. These two introductory courses are designed for students with limited or no prior course work in economics. While these two courses provide basic
economics knowledge, they are not required in the major. Students who matriculated at the University of Chicago in 2016–17 or later may use ECON 19900 Intro To Macroeconomics to fulfill one of the economics elective requirements.

Students are strongly encouraged to complete ECON 19800 Introduction to Microeconomics prior to ECON 20000 The Elements of Economic Analysis I (or ECON 20010 The Elements of Economic Analysis I Honors) and ECON 19900 Intro To Macroeconomics prior to ECON 20200 The Elements of Economic Analysis III (or ECON 20210 The Elements of Economic Analysis III Honors).

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>

or Honors Core Sequence 300

<table>
<thead>
<tr>
<th>Honors Core Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20010</td>
</tr>
<tr>
<td>ECON 20110</td>
</tr>
<tr>
<td>ECON 20210</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 19800 Introduction to Microeconomics prior to starting ECON 20000 The Elements of Economic Analysis I (or ECON 20100 The Elements of Economic Analysis II). 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 Monday evening of the first week of Autumn Quarter.
- Students must satisfy the calculus requirement as discussed in Calculus.

Note: Students who are completing the previous major requirements and are on track to complete ECON 20300 Elements of Economic Analysis IV after Autumn Quarter 2017 should take ECON 23950 Economic Policy Analysis in place of ECON 20300, regardless of matriculation date.

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. Note: The two-quarter sequence is only available to students who matriculated in 2016–17 or later. Those who matriculated in 2015–16 or earlier are required to take the standard three-quarter sequence.

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, and is designed for students who complete the MATH 15000s sequence or higher. This three-quarter empirical methods sequence covers the broad ranges of scope that the disciplines provide, which will be useful for further quantitative training in the major.

Option B: The two-quarter empirical sequence, comprised of an economics statistical methods course and a course in econometrics, is provided as an alternative for students who want to focus only on the relevant materials in linear algebra and statistics that pertain to econometrics. ECON 21010 Statistical Methods in Economics teaches the fundamental methods and materials from linear algebra and statistics that are utilized in many economic applications.

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>One of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 19620</td>
</tr>
<tr>
<td>or STAT 24300</td>
</tr>
<tr>
<td>or MATH 20250</td>
</tr>
<tr>
<td>or MATH 20700</td>
</tr>
</tbody>
</table>

One of the following: 100
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**

Option B is available only to students who matriculated at the University of Chicago in 2016–17 and later. 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>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21010</td>
<td>Statistical Methods in Economics</td>
<td>100</td>
</tr>
<tr>
<td>ECON 21020</td>
<td>Econometrics</td>
<td>100</td>
</tr>
<tr>
<td>Total Units</td>
<td></td>
<td>200</td>
</tr>
</tbody>
</table>

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

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.

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.

**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>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 23950</td>
<td>Economic Policy Analysis</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 23200</td>
<td>Topics in Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>or ECON 23220</td>
<td>Introduction to Advanced Macroeconomic Analysis</td>
<td></td>
</tr>
<tr>
<td>or ECON 23330</td>
<td>Introduction to Dynamic Economic Modeling</td>
<td></td>
</tr>
</tbody>
</table>

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. Students may not earn credit for both ECON 23950 Economic Policy Analysis and ECON 20300 Elements of Economic Analysis IV.

Note: Students on track to complete ECON 20300 Elements of Economic Analysis IV after Autumn Quarter 2017 should take ECON 23950 Economic Policy Analysis in place of ECON 20300, regardless of matriculation date.

**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 20200 The Elements of Economic Analysis III, with a couple of exceptions: Neither ECON 21010 Statistical Methods in Economics nor ECON 21030 Econometrics - Honors nor ECON 23950 Economic Policy Analysis can be used to satisfy the economics elective requirements; students who matriculated in 2016–17 or later may use ECON 19900 Intro To Macroeconomics to satisfy one of the economics elective requirements.
Students may use one course (pre-approved 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 who participate in a College-sponsored Study Abroad program may petition to count an additional outside course completed at the host institution to satisfy elective requirements of the major.

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

These rules imply that at most two courses completed outside the UC 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 College-sponsored Study Abroad program, then the student has fulfilled the outside electives two-course maximum and must complete the remaining elective requirements in the UC Department of Economics.

The following are pre-approved outside electives:

**Computer Science (only one may be used)**
- CMSC 10600 Fundamentals Of Programming-2
- or CMSC 12100 Computer Science with Applications I
- or CMSC 15100 Intro To Computer Science-1
- or CMSC 16100 Honors Introduction to Computer Science I

**Statistics**
- STAT 24500 Statistical Theory and Methods II
- STAT 25100 Introduction to Mathematical Probability
- STAT 25300 Introduction to Probability Models
- STAT 26100 Time Dependent Data

**Mathematics**
- MATH 20500 Analysis in Rn III
- MATH 20900 Honors Analysis in Rn III
- MATH 27300 Basic Theory of Ordinary Differential Equations

**Booth School of Business**
- BUSF 35200 Corporate Finance
- BUSF 38120 Behavioral Economics
- BUSF 41201 Big Data
- BUSF 41204 Machine Learning
- BUSF 42001 Competitive Strategy

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. Graduate level economics courses will be counted for elective credit, but consultation with the Undergraduate Office in advance of course registration is required.

**Summary of Requirements**

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

**Sample Programs**

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

**First Year**

- **Autumn Quarter**
  - MATH 13100
- **Winter Quarter**
  - MATH 13200
- **Spring Quarter**
  - MATH 13300
  - ECON 19800

**Second Year**

- **Autumn Quarter**
  - ECON 20000
  - MATH 19520
- **Winter Quarter**
  - ECON 20100
  - ECON 19900
- **Spring Quarter**
  - ECON 21020

**Third Year**

- **Autumn Quarter**
  - ECON 23950
  - MATH 19620
- **Winter Quarter**
  - STAT 23400
- **Spring Quarter**
  - ECON 21020

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:
First Year

<table>
<thead>
<tr>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 15100</td>
<td>MATH 15200</td>
<td>MATH 15300</td>
</tr>
<tr>
<td>ECON 19800</td>
<td></td>
<td>ECON 19800</td>
</tr>
</tbody>
</table>

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 19520</td>
<td>MATH 19620</td>
<td>STAT 23400</td>
</tr>
<tr>
<td>ECON 19900</td>
<td></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>

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:

First Year

<table>
<thead>
<tr>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13100</td>
<td>MATH 13200</td>
<td>MATH 13300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ECON 19800</td>
</tr>
</tbody>
</table>

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 19520</td>
<td>MATH 19620</td>
<td></td>
</tr>
<tr>
<td></td>
<td></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>

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 19520 Mathematical Methods for Social Sciences OR MATH 20400 Analysis in Rn II OR MATH 20800 Honors Analysis in Rn II

Three-quarter core sequence:

- ECON 20000 Elements of Economic Analysis I (OR ECON 20010 Elements of Economic Analysis I Honors)
- ECON 20100 Elements of Economic Analysis II (OR ECON 20110 Elements of Economic Analysis II Honors)
- ECON 20200 Elements of Economic Analysis III (OR ECON 20210 Elements of Economic Analysis III Honors)

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 Rn 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)

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 Economics:

- CMSC 12300 Computer Science with Applications III
- CMSC 15200 Intro To Computer Science-2
- CMSC 16200 Honors Introduction to Computer Science II

Two chosen from:

- ECON 21300 Data Construction and Interpretation in Economic Applications
ECON 21310 Econometrics and Machine Learning
ECON 21320 Applications of Econometrics and Data Science Methods

Students pursuing the specialization in data science are encouraged to complete all three courses. These economics courses can also be used as electives by student pursuing the standard BA in Economics. Descriptions for these courses are forthcoming.

Also, students pursuing the specialization in Data Science must complete two electives drawn from the following set of courses:

At most one of:

- ECON 21110 Applied Microeconometrics
- ECON 21130 Topics in Microeconometrics
- ECON 21150 Topics in Applied Econometrics

At most one of:

- ECON 21200 Time Series Econometrics
- STAT 26100 Time Dependent Data
- BUSF 41203 Financial Econometrics
- STAT 27400 Nonparametric Inference
- ECON 21410 Computational Methods in Economics
- STAT 27725 Machine Learning

Descriptions of the Data Science courses are forthcoming.

Students who no longer wish to pursue the specialization in data science must complete ECON 23950 Economic Policy Analysis and the necessary electives to satisfy the requirements of the standard BA in Economics. All economics courses completed in the pursuit in the specialization in data science will count toward the degree requirements of the BA in Economics. These students may also count coursework in Computer Science as the outside elective as discussed in the Electives section above.

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

Summaries of Requirements

BA in Economics, TRACK A: Three-Quarter Empirical Methods Sequence

GENERAL EDUCATION

One of the following: 200

- MATH 13100-13200 Elementary Functions and Calculus I-II
- MATH 15100-15200 Calculus I-II *
- MATH 16100-16200 Honors Calculus I-II
- MATH 16110 & MATH 16210 Honors Calculus I (IBL) and Honors Calculus II (IBL)

Total Units 200

MAJOR

One of the following: 100

- MATH 13300 Elementary Functions and Calculus III
- MATH 15300 Calculus III *
- MATH 16300 Honors Calculus III
- MATH 16310 Honors Calculus III (IBL)

One of the following: 300

- ECON 20000-20100-20200 The Elements of Economic Analysis I-II-III
- ECON 20010-20110-20210 The Elements of Economic Analysis: Honors I-II-III
- MATH 19520 Mathematical Methods for Social Sciences **
  or MATH 20400 Analysis in Rn II
  or MATH 20800 Honors Analysis in Rn II
- MATH 19620 Linear Algebra
  or MATH 20250 Abstract Linear Algebra
  or STAT 24300 Numerical Linear Algebra
or MATH 20700  Honors Analysis in Rn I
STAT 23400  Statistical Models and Methods  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 ECON 23220  Introduction to Advanced Macroeconomic Analysis
or ECON 23330  Introduction to Dynamic Economic Modeling
Four electives *  400
Total Units  1300

* Credit may be granted by examination.
** Students are encouraged to take prior to or concurrently with ECON 20000 or ECON 20010.
+ These courses must include three economics courses numbered higher than ECON 20200 and must follow guidelines in the preceding Electives section. (Note: ECON 19900 may be used to fulfill one economics elective requirement for students who matriculated in 2016–17 or later.)

BA in Economics, TRACK B: Two-Quarter Empirical Methods Sequence
Available only to students who matriculated in 2016–17 or later.

GENERAL EDUCATION
One of the following:  200
MATH 13100-13200  Elementary Functions and Calculus I-II
MATH 15100-15200  Calculus I-II *
MATH 16100-16200  Honors Calculus I-II
MATH 16110 & MATH 16210  Honors Calculus I (IBL) and Honors Calculus II (IBL)
Total Units  200

MAJOR
One of the following:  100
MATH 13300  Elementary Functions and Calculus III
MATH 15300  Calculus III *
MATH 16300  Honors Calculus III
MATH 16310  Honors Calculus III (IBL)
One of the following:  300
ECON 20000-20100-20200  The Elements of Economic Analysis I-II-III
ECON 20010-20110-20210  The Elements of Economic Analysis: Honors I-II-III
MATH 19520  Mathematical Methods for Social Sciences ** 100
or MATH 20400  Analysis in Rn II
or MATH 20800  Honors Analysis in Rn II
ECON 21010  Statistical Methods in Economics  100
ECON 21020  Econometrics  100
ECON 23950  Economic Policy Analysis  100
or ECON 23200  Topics in Macroeconomics
or ECON 23220  Introduction to Advanced Macroeconomic Analysis
or ECON 23330  Introduction to Dynamic Economic Modeling
Five electives *  500
Total Units  1300

* Credit may be granted by examination.
** Students are encouraged to take prior to or concurrently with ECON 20000 or ECON 20010.
These courses must include four economics courses numbered higher than ECON 20200 and must follow guidelines in the preceding Electives section. For students who matriculated in 2016–17 or later, ECON 19900 may be used to fulfill one economics elective requirement.

### Summary of Requirements: BA in Economics with Specialization in Data Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</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>MATH 19520</td>
<td>Mathematical Methods for Social Sciences</td>
<td>100</td>
</tr>
<tr>
<td>or MATH 20400</td>
<td>Analysis in Rn II</td>
<td></td>
</tr>
<tr>
<td>or MATH 20800</td>
<td>Honors Analysis in Rn II</td>
<td></td>
</tr>
<tr>
<td>ECON 20000</td>
<td>The Elements of Economic Analysis I</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 20010</td>
<td>The Elements of Economic Analysis I Honors</td>
<td></td>
</tr>
<tr>
<td>ECON 20100</td>
<td>The Elements of Economic Analysis II</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 20110</td>
<td>The Elements of Economic Analysis II Honors</td>
<td></td>
</tr>
<tr>
<td>ECON 20200</td>
<td>The Elements of Economic Analysis III</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 20210</td>
<td>The Elements of Economic Analysis III Honors</td>
<td></td>
</tr>
<tr>
<td>MATH 19620</td>
<td>Linear Algebra</td>
<td>100</td>
</tr>
<tr>
<td>or STAT 24300</td>
<td>Numerical Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or MATH 20250</td>
<td>Abstract Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or MATH 20700</td>
<td>Honors Analysis in Rn I</td>
<td></td>
</tr>
<tr>
<td>STAT 23400</td>
<td>Statistical Models and Methods</td>
<td>100</td>
</tr>
<tr>
<td>or STAT 24400</td>
<td>Statistical Theory and Methods I</td>
<td></td>
</tr>
<tr>
<td>or STAT 24410</td>
<td>Statistical Theory and Methods Ia</td>
<td></td>
</tr>
<tr>
<td>ECON 21020</td>
<td>Econometrics</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 21030</td>
<td>Econometrics - Honors</td>
<td></td>
</tr>
<tr>
<td>CMSC 12300</td>
<td>Computer Science with Applications III</td>
<td>100</td>
</tr>
<tr>
<td>or CMSC 15200</td>
<td>Intro To Computer Science-2</td>
<td></td>
</tr>
<tr>
<td>or CMSC 16200</td>
<td>Honors Introduction to Computer Science II</td>
<td></td>
</tr>
<tr>
<td>Two Data Science courses chosen from:</td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>ECON 21300 Data Construction and Interpretation in Economic Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 21310 Econometrics and Machine Learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 21320 Applications of Econometrics and Data Science Methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two electives:</td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>At most one of: ECON 21110 Applied Microeconomics, ECON 21130 Topics in Microeconomics, ECON 21150 Topics in Applied Econometrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At most one of: ECON 21200 Time Series Analysis, STAT 26100 Time Dependent Data, BUSF 41203 Financial Econometrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 21410</td>
<td>Computational Methods in Economics</td>
<td></td>
</tr>
<tr>
<td>STAT 27400</td>
<td>Nonparametric Inference</td>
<td></td>
</tr>
<tr>
<td>STAT 27725</td>
<td>Machine Learning</td>
<td></td>
</tr>
</tbody>
</table>

**Total Units**: 1300

### 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, 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 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.

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 15100-15200 Introduction to Computer Science I-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.

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

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.

Instructor(s): A. Sanderson; M. Lee Terms Offered: Autumn Spring Winter

**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.

Instructor(s): A. Sanderson Terms Offered: Spring Winter
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.

Instructor(s): P. Cheney & K. Pomeranz
Terms Offered: Winter

Note(s): History Gateways are introductory courses meant to appeal to 1st- through 3rd-yr students who may not have done previous course work on the topic of the course; topics cover the globe and span the ages.
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.

Instructor(s): J. Levy
Terms Offered: Spring
Equivalent Course(s): HIST 29533, HIST 39533

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.

Note(s): CHDV Distribution, A*; 1* Equivalent Course(s): CHDV 37950, PSYC 27950, PSYC 37950, BIOS 29265, ECON 14810

Instructor(s): D. Maestripieri
Terms Offered: Winter
Note(s): CHDV Distribution, A*
Equivalent Course(s): BIOS 29265, PSYC 27950, CHDV 27950, PSYC 37950, CHDV 37950

ECON 19000. Economics for Everyone. 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.

Terms Offered: Winter

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.

Instructor(s): G. Kaplan
Terms Offered: Spring

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).

Instructor(s): A. Sanderson, J. List
Terms Offered: Autumn, Spring

ECON 19900. Intro 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.

Instructor(s): A. Sanderson
Terms Offered: Autumn, Winter
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 19800 is strongly recommended of students without a prior microeconomics course.

Terms Offered: Autumn Spring
Prerequisite(s): MATH 13300 (with prior completion of or at least concurrent with MATH 19520), MATH 15300, or 16300. First-year students must also pass the economics placement exam or complete ECON 19800.

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.

Instructor(s): Staff Terms Offered: Autumn Winter
Prerequisite(s): ECON 20000 or 20010

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.

Instructor(s): Staff Terms Offered: Spring Winter
Prerequisite(s): ECON 20100 or 20110

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.

Instructor(s): Staff
Prerequisite(s): ECON 20200 or 20210

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 19800 is strongly recommended of students without a prior microeconomics course.

Instructor(s): Staff Terms Offered: Autumn Spring
Prerequisite(s): MATH 13300 (with prior completion of or at least concurrent with MATH 19520), MATH 15300, or 16300. First-year students must also pass the economics placement exam or complete ECON 19800.

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.

Instructor(s): Staff Terms Offered: Spring Winter
Prerequisite(s): ECON 20100 or 20110

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 19900 is strongly recommended of students without a prior macroeconomics course.

Instructor(s): Staff Terms Offered: Autumn Winter
Prerequisite(s): ECON 20200 or 20210

ECON 20310. The Elements of Economic Analysis IV 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 20300. 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.

Instructor(s): Staff Terms Offered: Spring Winter
Prerequisite(s): ECON 20300 or 20310
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.
Instructor(s): Staff Terms Offered: Autumn Winter
Prerequisite(s): ECON 20000 or 20010

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.
Instructor(s): Staff Terms Offered: Autumn Winter
Prerequisite(s): ECON 20000 or 20010

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.
Instructor(s): Staff Terms Offered: Spring Winter
Prerequisite(s): ECON 20100 or 20110

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 19900 is strongly recommended of students without a prior macroeconomics course.
Instructor(s): Staff Terms Offered: Spring Winter
Prerequisite(s): ECON 20100 or 20110

ECON 20520. Formal Models of Political Economics. 100 Units.
This course introduces formal economic models adopted in the modern inquiry into the incentives of participants in political processes. The approach is largely game theoretical, while topics covered include electoral competition, checks and balances, delegation, legislative bargaining, political agency, special interest politics and campaign finance.
Instructor(s): R. Fang Terms Offered: Spring
Prerequisite(s): ECON 20100 (ECON 20700 strongly recommended)

ECON 20700. Game Theory and Economic Applications. 100 Units.
ECON 20700 or 20770 may be used as an economics elective, but only one may be used toward degree requirements. 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.
Instructor(s): Staff Terms Offered: Autumn Spring Winter
Prerequisite(s): ECON 20100

ECON 20770. Decision and Strategy. 100 Units.
ECON 20700 or 20770 may be used as an economics elective, but only one may be used toward degree requirements. 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.
Instructor(s): E. Lipnowski Terms Offered: Winter
Prerequisite(s): ECON 20100 and MATH 20300, or consent of instructor

ECON 20780. Decision and Strategy II. 100 Units.
We continue the formal introduction to decision theory and game theory begun in ECON 20770, 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.
Instructor(s): B. Brooks Terms Offered: Spring
Prerequisite(s): ECON 20770 or consent of instructor
ECON 20800. 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.
Instructor(s): P. Reny
Terms Offered: Winter
Prerequisite(s): ECON 20100, MATH 20300, and STAT 24400

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.
Instructor(s): Staff
Terms Offered: Autumn Spring
Prerequisite(s): At least concurrent registration with Econ 20100

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.
Instructor(s): Staff
Terms Offered: Autumn, Spring, Winter
Prerequisite(s): ECON 20100, ECON 21010, or STAT 23400 and MATH 19620 (or MATH 20000 or STAT 24300 or MATH 20250)

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.
Instructor(s): Staff
Terms Offered: Spring, Winter
Prerequisite(s): ECON 20100, and STAT 24400, 24410 or 24500, and MATH 20250 or STAT 24300; or consent of instructor

ECON 21110. Applied Microeconometrics. 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 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.
Instructor(s): J. Joensen
Prerequisite(s): ECON 21020 or ECON 21030

ECON 21130. Topics in Microeconometrics. 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 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.
Prerequisite(s): ECON 21020 or ECON 21030

ECON 21150. Topics in Applied Econometrics. 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 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.
Instructor(s): A. Hortacsu
Terms Offered: Winter
Prerequisite(s): ECON 21030
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.
Instructor(s): Staff Terms Offered: Spring
Prerequisite(s): ECON 20100 and ECON 21020 or ECON 21030

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.
Instructor(s): L. Bursztyn Terms Offered: Winter
Prerequisite(s): ECON 20100 and ECON 21020 or ECON 21030
Equivalent Course(s): ECON 41100

ECON 21830. Social Neuroscience. 100 Units.
Social species, by definition, create emergent organizations beyond the individual - structures ranging from dyads and families to groups and cultures. Social neuroscience is the interdisciplinary field devoted to the study of neural, hormonal, cellular, and genetic mechanisms, and to the study of the associations and influences between social and biological levels of organization. The course provides a valuable interdisciplinary framework for students in psychology, neuroscience, behavioral economics, and comparative human development. Many aspects of social cognition will be examined, including but not limited to attachment, attraction, altruism, contagion, cooperation, competition, dominance, empathy, isolation, morality, and social decision-making.
Instructor(s): J. Decety Terms Offered: Spring
Equivalent Course(s): NSCI 21000, CHDV 22350, PSYC 22350, BIOS 24137

ECON 22200. Topics in American Economic History. 100 Units.
Economic analysis is applied to important issues in American economic history. Specific topics vary, but may include the following: the economics of colonization, the transatlantic slave trade, the role of indentured servitude and slavery in the colonial labor market, the record and sources of 19th-century economic growth, economic causes and effects of 19th-century immigration, the expansion of education, the economics of westward migration, determinants of long-run trends in the distribution of income and wealth, the quantitative analysis of economic and social mobility, and the economics of racial discrimination in the twentieth-century South.
Instructor(s): D. Galenson
Equivalent Course(s): ECON 32000

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.
Instructor(s): A. Sanderson and Staff Terms Offered: Winter
Prerequisite(s): Third- or fourth-year standing

ECON 22600. Innovators. 100 Units.
Economists believe that innovation is a primary source of economic growth. Yet although most innovations are made by individuals or small groups, until recently economists have not studied how those exceptional people produce their discoveries. Recent research has shown that there are two very different types of innovators, who have different goals and follow different processes. This course surveys this research, examining the careers and innovations of important practitioners in a range of modern arts, including painters, novelists, sculptors, poets, movie directors, photographers, songwriters, and architects, as well as entrepreneurs and scientists. The material covered in this course adds a new dimension to our understanding of creativity and of how innovators in many different activities produce new forms of art and science.
Instructor(s): D. Galenson
Prerequisite(s): ECON 20100
Equivalent Course(s): ECON 42900
ECON 22650. Creativity. 100 Units.
This seminar examines recent research on how creative people innovate in a wide range of intellectual activities. The main project for the course is a term paper that analyzes the creative life cycle of one or more innovators of the student's choice, using both quantitative and qualitative evidence. Students present their research in progress for discussion. The seminar is designed to give students all the tools needed to do this research, including choosing a subject, finding and using an appropriate data set, and negotiating the relevant scholarship.
Instructor(s): D. Galenson
Prerequisite(s): ECON 19800 or consent of instructor
Equivalent Course(s): ECON 42800

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.
Instructor(s): H. Uhlig Terms Offered: Winter
Prerequisite(s): ECON 20200 (or ECON 20210) and ECON 21020 (or ECON 21030)

ECON 23330. 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.
Instructor(s): R. Shimer Terms Offered: Winter
Prerequisite(s): ECON 20200 (or ECON 20210) and ECON 21020 (or ECON 21030)

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.
Instructor(s): Staff Terms Offered: TBD
Prerequisite(s): ECON 20100 and ECON 21020 (or ECON 21030)
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.
Instructor(s): M. Deshpande Terms Offered: Spring
Prerequisite(s): ECON 20100 and ECON 21020 or ECON 21030

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.
Instructor(s): A. Sanderson and Staff Terms Offered: Winter
Prerequisite(s): Third- or fourth-year standing
Note(s): 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.
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. Prerequisite(s): ECON 20300, STAT 23400, and ECON 21000
Instructor(s): Staff Terms Offered: Autumn, Spring, Winter
Prerequisite(s): ECON 23950 and ECON 21020 or ECON 21030

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.
Instructor(s): F. Alvarez Terms Offered: Spring
Prerequisite(s): ECON 20100 and STAT 23400 (or ECON 21010)

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.
Instructor(s): G. Ponti Terms Offered: Spring
Prerequisite(s): ECON 20100 and ECON 21020 (or ECON 21010)

ECON 25710. China's Economic Development & Transition. 100 Units.
Equivalent Course(s): PBPL 27150

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.
Instructor(s): M. Golosov Terms Offered: Autumn
Prerequisite(s): ECON 23950 or consent of instructor
Note(s): ECON 26010 or 26020 may be used as an economics elective, but only one may be used toward degree requirements.

ECON 26020. Public Sector Economics. 100 Units.
ECON 26010 or 26020 may be used as an economics elective, but only one may be used toward degree requirements. 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.
Instructor(s): C. Mulligan
Prerequisite(s): ECON 23950 AND ECON 21020 (or ECON 21030); or consent of instructor
ECON 26500. Environmental Economics. 100 Units.
This course applies theoretical and empirical economic tools to environmental issues. We discuss broad concepts such as externalities, public goods, property rights, market failure, and social cost-benefit analysis. These concepts are applied to areas that include nonrenewable resources, air and water pollution, solid waste management, and hazardous substances. We emphasize analyzing the optimal role for public policy.
Instructor(s): S. Shaikh Terms Offered: Econ 26500 will not be offered in 2018-19.
Equivalent Course(s): ENST 26530, PBPL 32631

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.
Instructor(s): S. Shaikh Terms Offered: Winter
Prerequisite(s): ECON 20000 or ECON 20100 or PBPL 20000 or PBPL 22200 (or equivalent), STAT 22000 or STAT 23400 or PBPL 26400 (or equivalent); for ECON Enrollment: ECON 20000 and ECON 20100, STAT 23400
Equivalent Course(s): PBPL 26530, ENST 26530, PPHA 32510

ECON 26540. Environment, Agriculture, and Food: Advanced Economic and Policy Analysis. 100 Units.
This course is an extension of ENST 26530 but also stands alone as a complete course itself. Students don't need to take ENST 26530 to enroll in this course. 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.
Instructor(s): S. Shaikh Terms Offered: Spring
Prerequisite(s): ECON 20000 or ECON 20100 or PBPL 20000 or PBPL 22200 (or equivalent), STAT 22000 or STAT 23400 or PBPL 26400 (or equivalent); for ECON Enrollment: ECON 20000 and ECON 20100, STAT 23400
Equivalent Course(s): ENST 26531, PBPL 26531, PPHA 32520

ECON 26700. 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.
Instructor(s): D. Neal Terms Offered: TBD
Prerequisite(s): ECON 21020 or ECON 21030
Equivalent Course(s): PBPL 26705

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.
Instructor(s): S. Berry, G. Tolley Terms Offered: TBD. May be offered 2018-2019
Prerequisite(s): PQ: Third- or fourth-year standing. For ECON majors who want ECON credit for this course (ECON 26800): PQ is ECON 20100.
Equivalent Course(s): PHS 39000, BPRO 29000, PPHA 39201, CHSS 37502, PBPL 29000, ENST 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?
Instructor(s): J. Leitze Terms Offered: Winter
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.
Instructor(s): F. Tintelnot Terms Offered: Winter
Prerequisite(s): ECON 20100
Equivalent Course(s): PBPL 27000

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 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.
Instructor(s): D. Meltzer Terms Offered: TBD
Prerequisite(s): PBPL 20000 or ECON 20000 and one undergraduate course in quantitative research methods (Statistics or Econometrics) or the equivalent or consent of the instructor
Equivalent Course(s): PBHS 38300, CCTS 38300, PPHA 38300, PBPL 28300

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.
Instructor(s): P. Tebaldi Terms Offered: Spring
Prerequisite(s): ECON 20100 required, ECON 21020 strongly preferred

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.
Instructor(s): S. Neckermann Terms Offered: Winter
Prerequisite(s): ECON 20100 and STAT 23400; Econ 21000 strongly recommended.

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.
Instructor(s): A. Sanderson Terms Offered: Spring
Prerequisite(s): ECON 20100; ECON 21020 or ECON 21030 strongly recommended

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.
Instructor(s): J. Leitzel Terms Offered: Winter
Prerequisite(s): ECON 20100
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. Grades will be determined as follows: 40% by the sum of all the homework, 30% by class participation and 30% by the final. Registration for this class concludes at the end of week 1.
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.
Instructor(s): S. Levitt Terms Offered: Winter
Prerequisite(s): ECON 20100 required; ECON 21020, STAT 23400 or ECON 21010 strongly recommended Equivalent Course(s): PBPL 23200

ECON 29700. Undergrad Rdg/Rsch: Economics. 100 Units.
Students are required to submit the College Reading and Research Course Form. Prerequisite(s): Consent of directors of the undergraduate program
Instructor(s): J. Wong Terms Offered: Autumn, Winter, Spring
Prerequisite(s): Consent of directors of the undergraduate program

ECON 29800. Undergraduate Honors Workshop. 100 Units.
For details, see the preceding Honors section.
Instructor(s): K. Yoshida, V. Lima Terms Offered: Autumn Spring Winter
Prerequisite(s): Faculty sponsorship and consent of honors workshop supervisors
Font Notice
This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

- Times was used instead of Trajan.
- Times was used instead of Palatino.

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