ECONOMICS

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. 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 in carrying out their day-to-day tasks.

BA in Economics, Tracks A and 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, Tracks A and 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 Code</th>
<th>Course Name</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 10000</td>
<td>Principles of Microeconomics</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 19800</td>
<td>Introduction to Microeconomics</td>
<td></td>
</tr>
<tr>
<td>ECON 10200</td>
<td>Principles of Macroeconomics</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 19900</td>
<td>Introduction to Macroeconomics</td>
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</tr>
</tbody>
</table>

Students who wish to complete the major with more rigorous mathematics may substitute MATH 20400 for MATH 19520 or MATH 20800 for MATH 20400.

**Calculus**

Students who have an interest in the major should take calculus at the highest level for which they qualify. Students should 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 enrolled 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 enrolled 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 Higher-Level Math Test administered by the College prior to Orientation). 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 (formerly ECON 19800 Introduction to Microeconomics) and ECON 10200 Principles of Macroeconomics (formerly ECON 19900 Introduction 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 Introduction to Macroeconomics or ECON 10200 Principles of Macroeconomics to fulfill one of the economics elective requirements.

Students may not receive credit for both ECON 10000 Principles of Microeconomics and ECON 19800 Introduction to Microeconomics. Likewise, students may not receive credit for both ECON 10200 Principles of Macroeconomics and ECON 19900 Introduction to Macroeconomics.

Students are strongly encouraged to complete ECON 10000 Principles of Microeconomics or 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 10200 Principles of Macroeconomics or ECON 19900 Introduction 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.

**Standard Core Sequence**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</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/ECON 19800 Introduction to 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.

*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.

**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 a course in statistical methods in economics 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>
<th>100</th>
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</thead>
<tbody>
<tr>
<td>MATH 19620 Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or STAT 24300 Numerical Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or MATH 20250 Abstract Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or MATH 20700 Honors Analysis in Rn I</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>One of the following:</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 23400 Statistical Models and Methods</td>
<td></td>
</tr>
<tr>
<td>or STAT 24400 Statistical Theory and Methods I</td>
<td></td>
</tr>
<tr>
<td>or STAT 24410 Statistical Theory and Methods Ia</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>One of the following:</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21020 Econometrics</td>
<td></td>
</tr>
<tr>
<td>or ECON 21030 Econometrics - Honors</td>
<td></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:

| ECON 21010 Statistical Methods in Economics | 100 |
| ECON 21020 Econometrics | 100 |

Total Units 200

Students should not begin the empirical methods sequence earlier than concurrently with ECON 21000 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.

| ECON 23950 Economic Policy Analysis | 100 |
| or ECON 23200 Topics in Macroeconomics |
ECON 23220  Introduction to Advanced Macroeconomic Analysis
or ECON 23330  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. 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 21020 The Elements of Economic Analysis III, with a couple of exceptions: Neither ECON 21030 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 10200 Principles of Macroeconomics OR ECON 19900 Introduction 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. Petitions must be submitted prior to course enrollment to be considered.

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 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 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 Department of Economics.

The following are pre-approved outside electives:

Computer Science (only one may be used)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CMSC 10600</td>
<td>Fundamentals of Computer Programming II</td>
</tr>
<tr>
<td>or CMSC 12100</td>
<td>Computer Science with Applications I</td>
</tr>
<tr>
<td>or CMSC 15100</td>
<td>Introduction to Computer Science I</td>
</tr>
<tr>
<td>or CMSC 16100</td>
<td>Honors Introduction to Computer Science I</td>
</tr>
</tbody>
</table>

Statistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 24500</td>
<td>Statistical Theory and Methods II</td>
</tr>
<tr>
<td>or STAT 24510</td>
<td>Statistical Theory and Methods IIa</td>
</tr>
<tr>
<td>STAT 25100</td>
<td>Introduction to Mathematical Probability</td>
</tr>
<tr>
<td>or STAT 25150</td>
<td>Introduction to Mathematical Probability-A</td>
</tr>
<tr>
<td>STAT 25300</td>
<td>Introduction to Probability Models</td>
</tr>
<tr>
<td>STAT 26100</td>
<td>Time Dependent Data</td>
</tr>
</tbody>
</table>

Mathematics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 20500</td>
<td>Analysis in Rn III</td>
</tr>
<tr>
<td>MATH 20900</td>
<td>Honors Analysis in Rn III</td>
</tr>
<tr>
<td>MATH 27300</td>
<td>Basic Theory of Ordinary Differential Equations</td>
</tr>
</tbody>
</table>

University of Chicago Booth School of Business

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSN 20410</td>
<td>Corporation Finance</td>
</tr>
<tr>
<td>or BUSN 35200</td>
<td>Corporation Finance</td>
</tr>
<tr>
<td>BUSN 20620</td>
<td>Data Driven Marketing</td>
</tr>
<tr>
<td>or BUSN 37105</td>
<td>Data Science for Marketing Decision Making</td>
</tr>
<tr>
<td>BUSN 20710</td>
<td>Behavioral Economics</td>
</tr>
<tr>
<td>or BUSN 38120</td>
<td>The Study of Behavioral Economics</td>
</tr>
<tr>
<td>BUSN 20800</td>
<td>Big Data</td>
</tr>
</tbody>
</table>
or BUSN 41201  Big Data
BUSN 20820  Financial Econometrics
or BUSN 41203  Financial Econometrics
BUSN 20810  Machine Learning
or BUSN 41204  Machine Learning
BUSN 20900  Competitive Strategy
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></td>
<td></td>
</tr>
<tr>
<td>Second Year</td>
<td>Autumn Quarter</td>
<td>Winter Quarter</td>
<td>Spring Quarter</td>
</tr>
<tr>
<td>ECON 20000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 19520</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Year</td>
<td>Autumn Quarter</td>
<td>Winter Quarter</td>
<td>Spring Quarter</td>
</tr>
<tr>
<td>ECON 23950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 19620</td>
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</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></td>
<td></td>
</tr>
<tr>
<td>Second Year</td>
<td>Autumn Quarter</td>
<td>Winter Quarter</td>
<td>Spring Quarter</td>
</tr>
<tr>
<td>ECON 20000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 19520</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Year</td>
<td>Autumn Quarter</td>
<td>Winter Quarter</td>
<td>Spring Quarter</td>
</tr>
<tr>
<td>ECON 23950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 21020</td>
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</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></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</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 in carrying out their day-to-day tasks. 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 Economics major must complete a Calculus sequence. However, it is not required for the Specialization in Business Economics. Students are still strongly urged to take Calculus to ensure sufficient quantitative understanding and competence.

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/#beec17b3ce304bae93c5016f9592c73d6) 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1000</td>
<td>Principles of Microeconomics</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 2000</td>
<td>The Elements of Economic Analysis I</td>
<td></td>
</tr>
<tr>
<td>ECON 10200</td>
<td>Principles of Macroeconomics</td>
<td>100</td>
</tr>
<tr>
<td>or ECON 20200</td>
<td>The Elements of Economic Analysis III</td>
<td></td>
</tr>
<tr>
<td>One Foundations of Business Education course, chosen from:</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>BUSN 20100</td>
<td>Financial Accounting</td>
<td></td>
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</table>

### Second Year

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>ECON 20000, MATH 19520</td>
</tr>
<tr>
<td>Winter</td>
<td>ECON 20100</td>
</tr>
<tr>
<td>Spring</td>
<td>ECON 20200</td>
</tr>
</tbody>
</table>

### Third Year

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>ECON 23950, ECON 21010</td>
</tr>
<tr>
<td>Winter</td>
<td>ECON 21020</td>
</tr>
<tr>
<td>Autumn</td>
<td>ECON 10200</td>
</tr>
</tbody>
</table>

### Notes

- ECON 20000
- ECON 20100
- ECON 20200
- BUSN 20100
- Principles of Microeconomics
- The Elements of Economic Analysis I
- Principles of Macroeconomics
- The Elements of Economic Analysis III
Students who have previously completed ECON 19800 (but not ECON 20000) will have satisfied this requirement.

Students who have previously completed ECON 19900 (but not ECON 20200) will have satisfied this requirement.

BUSN 2XXXX-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 microeconomic methods course and one macroeconomic methods course from the lists below:

One Microeconomic Methods course, chosen from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 11700</td>
<td>Introduction to Behavioral and Experimental Economics</td>
</tr>
<tr>
<td>ECON 20100</td>
<td>The Elements of Economic Analysis II</td>
</tr>
<tr>
<td>ECON 20700</td>
<td>Game Theory and Economic Applications</td>
</tr>
<tr>
<td>ECON 21800</td>
<td>Experimental Economics</td>
</tr>
</tbody>
</table>

One Macroeconomic Methods course, chosen from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 13000</td>
<td>Introduction to Money and Banking</td>
</tr>
<tr>
<td>ECON 16020</td>
<td>Introduction to Public Sector Economics</td>
</tr>
<tr>
<td>ECON 17100</td>
<td>Introduction to International Trade</td>
</tr>
<tr>
<td>ECON 23950</td>
<td>Economic Policy Analysis</td>
</tr>
</tbody>
</table>

Note: Students may count either ECON 13000 or ECON 23950, but not both, toward the forty-two 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</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21010</td>
<td>Statistical Methods in Economics</td>
</tr>
<tr>
<td>or STAT 22000</td>
<td>Statistical Methods and Applications</td>
</tr>
<tr>
<td>or STAT 23400</td>
<td>Statistical Models and Methods</td>
</tr>
<tr>
<td>or STAT 24400</td>
<td>Statistical Theory and Methods</td>
</tr>
<tr>
<td>ECON 11020</td>
<td>Introduction to Econometrics</td>
</tr>
<tr>
<td>or ECON 21020</td>
<td>Econometrics</td>
</tr>
<tr>
<td>or ECON 21030</td>
<td>Econometrics - Honors</td>
</tr>
</tbody>
</table>

Note: 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 potential majors 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 business economics. It is expected that students use this 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.

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. 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.

A note on professional school courses: The rules of the College allow students to use no more than four courses from professional schools 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.

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/#beecf17b3c304bae93c50f4599c2746) 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

<table>
<thead>
<tr>
<th>Bundle</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>BUSN 20100 Financial Accounting</td>
</tr>
<tr>
<td></td>
<td>BUSN 20101 Managerial Accounting</td>
</tr>
<tr>
<td></td>
<td>BUSN 20140 Accounting and Financial Analysis</td>
</tr>
<tr>
<td></td>
<td>BUSN 20150 Financial Statement Analysis</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>BUSN 20330 Building the New Venture</td>
</tr>
<tr>
<td></td>
<td>BUSN 20340 Developing a New Venture</td>
</tr>
<tr>
<td></td>
<td>BUSN 20160 Accounting for Entrepreneurship</td>
</tr>
<tr>
<td>Finance</td>
<td>BUSN 20405 Financial Instruments</td>
</tr>
<tr>
<td></td>
<td>BUSN 20410 Corporation Finance</td>
</tr>
<tr>
<td></td>
<td>BUSN 20400 Investments</td>
</tr>
<tr>
<td>Management</td>
<td>BUSN 20702 Managerial Decision Making</td>
</tr>
<tr>
<td></td>
<td>BUSN 20710 Behavioral Economics</td>
</tr>
<tr>
<td></td>
<td>BUSN 20701 Managing in Organizations</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.

Students may further their business education by completing two additional Booth courses, potentially from Booth courses outside of the bundle list below (subject to the discretion of the instructor). However, per College rules, they will not count toward any degree requirements.

**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 20200, assuming that the student has the appropriate prerequisites for the course. Note that 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.

**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: 200
- 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

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

One three-quarter empirical methods sequence: 300
- 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)

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:

One of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMSC 12300</td>
<td>Computer Science with Applications III</td>
<td>100</td>
</tr>
<tr>
<td>or CMSC 15200</td>
<td>Introduction to Computer Science II</td>
<td></td>
</tr>
<tr>
<td>or CMSC 16200</td>
<td>Honors Introduction to Computer Science II</td>
<td></td>
</tr>
</tbody>
</table>

Two chosen from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21300</td>
<td>Data Construction and Interpretation in Economic Applications</td>
</tr>
<tr>
<td>ECON 21320</td>
<td>Applications of Econometric and Data Science Methods</td>
</tr>
<tr>
<td>ECON 21330</td>
<td>Econometrics and Machine Learning</td>
</tr>
</tbody>
</table>

Total Units 300

Students pursuing the specialization in data science are encouraged to complete all ECON 213xx courses. These economics courses can also be used as electives by student pursuing the standard BA in economics.

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

At most one of:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21110</td>
<td>Applied Microeconometrics</td>
</tr>
<tr>
<td>ECON 21150</td>
<td>Topics in Applied Econometrics</td>
</tr>
</tbody>
</table>

At most one of:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21200</td>
<td>Time Series Econometrics</td>
</tr>
<tr>
<td>STAT 26100</td>
<td>Time Dependent Data</td>
</tr>
<tr>
<td>BUSN 20820</td>
<td>Financial Econometrics</td>
</tr>
<tr>
<td>or BUSN 41203</td>
<td>Financial Econometrics</td>
</tr>
<tr>
<td>ECON 21410</td>
<td>Computational Methods in Economics</td>
</tr>
<tr>
<td>ECON 23040</td>
<td>Cryptocurrencies</td>
</tr>
<tr>
<td>STAT 27400</td>
<td>Nonparametric Inference</td>
</tr>
<tr>
<td>STAT 27725</td>
<td>Machine Learning</td>
</tr>
</tbody>
</table>

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 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 course work in computer science as the outside elective as discussed in the Electives section.

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>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13100-13200</td>
<td>Elementary Functions and Calculus I-II</td>
<td>200</td>
</tr>
<tr>
<td>MATH 15100-15200</td>
<td>Calculus I-II</td>
<td></td>
</tr>
<tr>
<td>MATH 16100-16200</td>
<td>Honors Calculus I-II</td>
<td></td>
</tr>
<tr>
<td>MATH 16110 &amp; MATH 16210</td>
<td>Honors Calculus I (IBL) and Honors Calculus II (IBL)</td>
<td></td>
</tr>
</tbody>
</table>

Total Units 200

MAJOR

One of the following:

<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>MATH 15300</td>
<td>Calculus III</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Units</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>MATH 16300</td>
<td>Honors Calculus III</td>
<td></td>
</tr>
<tr>
<td>MATH 16310</td>
<td>Honors Calculus III (IBL)</td>
<td></td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000-20100-20200</td>
<td>The Elements of Economic Analysis I-II-III</td>
<td></td>
</tr>
<tr>
<td>ECON 20100-20110-20210</td>
<td>The Elements of Economic Analysis: Honors I-II-III</td>
<td></td>
</tr>
</tbody>
</table>

MATH 19520 or MATH 20400 or MATH 20800

MATH 19620 or MATH 20250 or STAT 24300 or MATH 20700

STAT 23400 or STAT 24400 or STAT 24410

ECON 21020 or ECON 21030

ECON 23950 or ECON 23200 or ECON 23220 or ECON 23330

Four electives

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 at least two economics courses numbered higher than ECON 20200 and must follow guidelines in the preceding Electives section. (Note: ECON 19900 or 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13100-13200</td>
<td>Elementary Functions and Calculus I-II</td>
<td></td>
</tr>
<tr>
<td>MATH 15100-15200</td>
<td>Calculus I-II *</td>
<td></td>
</tr>
<tr>
<td>MATH 16100-16200</td>
<td>Honors Calculus I-II</td>
<td></td>
</tr>
<tr>
<td>MATH 16110 &amp; MATH 16210</td>
<td>Honors Calculus I (IBL) and Honors Calculus II (IBL)</td>
<td></td>
</tr>
</tbody>
</table>

Total Units 200

MAJOR

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13300</td>
<td>Elementary Functions and Calculus III</td>
<td></td>
</tr>
<tr>
<td>MATH 15300</td>
<td>Calculus III *</td>
<td></td>
</tr>
<tr>
<td>MATH 16300</td>
<td>Honors Calculus III</td>
<td></td>
</tr>
<tr>
<td>MATH 16310</td>
<td>Honors Calculus III (IBL)</td>
<td></td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000-20100-20200</td>
<td>The Elements of Economic Analysis I-II-III</td>
<td></td>
</tr>
<tr>
<td>ECON 20100-20110-20210</td>
<td>The Elements of Economic Analysis: Honors I-II-III</td>
<td></td>
</tr>
<tr>
<td>MATH 19520 or MATH 20400 or MATH 20800</td>
<td>Mathematical Methods for Social Sciences **</td>
<td></td>
</tr>
</tbody>
</table>

or Analysis in Rn II

or Honors Analysis in Rn II

100
### MAJOR

**ECON 10000** or ECON 20000: Principles of Microeconomics or The Elements of Economic Analysis I 100

**ECON 10200** or ECON 20200: Principles of Macroeconomics or The Elements of Economic Analysis III 100

One Foundations of Business Economics course, chosen from:
- **BUSN 20100** Financial Accounting 100
- **BUSN 20330** Building the New Venture
- **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 11700** Introduction to Behavioral and Experimental Economics 100
- **ECON 20100** The Elements of Economic Analysis II
- **ECON 20700** Game Theory and Economic Applications
- **ECON 21800** Experimental Economics

One Macroeconomic Methods course, chosen from:
- **ECON 13000** or **ECON 23000**: Introduction to Money and Banking or Money and Banking 100
- **ECON 16020** or **ECON 26020**: Introduction to Public Sector Economics or Public Sector Economics
- **ECON 17100** or **ECON 27000**: Introduction to International Trade or International Economics
- **ECON 23950** Economic Policy Analysis 100
- **ECON 21010** Statistical Methods in Economics or **ECON 21020** Econometrics or **ECON 21030** - Econometrics - Honors 100
- **ECON 21010** Statistical Methods in Economics or **ECON 21020** Econometrics or **ECON 21030** - Econometrics - Honors

One Perspectives elective 100

Three electives from the University of Chicago Booth School of Business 300

Two electives from the Department of Economics 200

**Total Units**: 1300
Students who have previously completed ECON 19800 but not ECON 20000 will have satisfied this requirement.

Students who have previously completed ECON 19900 but not ECON 20200 will have satisfied this requirement.

Students may count either ECON 13000 or ECON 23950, but not both, toward the forty-two credits required for graduation.

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

Students must take Chicago Booth courses in at least three thematic ‘bundles.’ See Electives section for details.

Note that BUSN 2XXX-level (undergraduate-only) versions of these courses will follow some College policies regarding registration, scheduling, grading, etc. The BUSN 3XXX-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/#beecf17b3e304bae93c50f4f595c27d6) for details.

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

GENERAL EDUCATION

One of the following: 200

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 13100</td>
<td>Elementary Functions and Calculus I-II</td>
</tr>
<tr>
<td>MATH 15100</td>
<td>Calculus I-II</td>
</tr>
<tr>
<td>MATH 16100</td>
<td>Honors Calculus I-II</td>
</tr>
<tr>
<td>MATH 16110</td>
<td>Honors Calculus I (IBL)</td>
</tr>
<tr>
<td>MATH 16210</td>
<td>and Honors Calculus II (IBL)</td>
</tr>
</tbody>
</table>

Total Units 200

MAJOR

MATH 13300   Elementary Functions and Calculus III 100
or MATH 15300 Calculus III
or MATH 16300 Honors Calculus III
or MATH 16310 Honors Calculus III (IBL)

MATH 19520 Mathematical Methods for Social Sciences 100
or MATH 20400 Analysis in Rn II
or MATH 20800 Honors Analysis in Rn II

One of the following: 300

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 20000</td>
<td>The Elements of Economic Analysis I-II-III</td>
</tr>
<tr>
<td>ECON 20100</td>
<td>The Elements of Economic Analysis: Honors I-II-III</td>
</tr>
</tbody>
</table>

MATH 19620 Linear Algebra 100
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 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

CMSC 12300 Computer Science with Applications III 100
or CMSC 15200 Introduction to Computer Science II
or CMSC 16200 Honors Introduction to Computer Science II

Two Data Science courses chosen from: 200

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21300</td>
<td>Data Construction and Interpretation in Economic Applications</td>
</tr>
<tr>
<td>ECON 21320</td>
<td>Applications of Econometric and Data Science Methods</td>
</tr>
<tr>
<td>ECON 21330</td>
<td>Econometrics and Machine Learning</td>
</tr>
</tbody>
</table>

At most one of: ECON 21110 Applied Microeconomics, ECON 21130 Topics in Microeconomics, ECON 21150 Topics in Applied Econometrics
At most one of: ECON 21200 Time Series Analysis, STAT 26100 Time Dependent Data, BUSN 20820 Financial Econometrics (or BUSN 41203 Financial Econometrics)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 21410</td>
<td>Computational Methods in Economics</td>
</tr>
<tr>
<td>ECON 23040</td>
<td>Cryptocurrencies</td>
</tr>
<tr>
<td>STAT 27400</td>
<td>Nonparametric Inference</td>
</tr>
<tr>
<td>STAT 27725</td>
<td>Machine Learning</td>
</tr>
</tbody>
</table>

Total Units 1100

* Credit may be granted by examination.

**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 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.
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.

Advanced economics undergraduates are encouraged to enroll in Economics master's-level (ECMA) courses. For more information, consult with juliew@uchicago.edu.

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: Autumn Spring Winter

**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.
Instructor(s): Staff Terms Offered: Autumn Spring Winter
Prerequisite(s): ECON 10000 and ECON 10200; ECON 21010 or STAT 22000 or STAT 23400 or STAT 24400

**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 dif’). 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.
Instructor(s): S. Bonhomme Terms Offered: Winter
Prerequisite(s): ECON 10000/20000/20010 and STAT 22000/23400/24400/ECON 21010

**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.
Instructor(s): Staff Terms Offered: TBD
Prerequisite(s): ECON 10000 or ECON 19800 or ECON 20000 or ECON 20010

**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.
Terms Offered: Summer
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.
Terms Offered: Summer

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.
Terms Offered: Summer

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.
Terms Offered: Summer

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.
Instructor(s): K. Kuevibulvanich Terms Offered: TBD
Prerequisite(s): Econ 10200/19900/20200/20210
Note(s): Students may not receive credit for both ECON 13000 and ECON 23950. Students may not receive credit for both ECON 13000 and ECON 23000.

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).
Instructor(s): D. Koustas Terms Offered: Spring
Equivalent Course(s): PBPL 28528

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).
Instructor(s): Staff Terms Offered: TBD
Prerequisite(s): ECON 10000 (or ECON 19800), ECON 10200 (ECON 19900)
Note(s): Students may not receive credit for both ECON 16020 and ECON 26010/ECON 26020.

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, and a case study using visualizations of campus water data will be conducted by students in the course.

Instructor(s): Sabina Shaikh Terms Offered: Spring

Note(s): No prerequisites but the following courses are recommended prior to enrollment in ENST 21310: one economics course and ENST/MENG 20300: The Science, History, Policy, and Future of Water (Winter 2020) ENST/MENG 20300: The Science, History, Policy, and Future of Water (Winter 2020)

Equivalent Course(s): LLSO 21310, PBPL 21310, GLST 21310, ENST 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.

Instructor(s): S. Shaikh Terms Offered: Autumn
Prerequisite(s): ECON 19800 or higher, or PBPL 20000
Note(s): Not offered in Autumn of the 2020-21 academic year.
Equivalent Course(s): PBPL 21800, LLSO 26201, ENST 21800

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.

Instructor(s): G. Pieters Terms Offered: Autumn
Prerequisite(s): ECON 10200/ECON 19900/ECON 20200/ECON 20210

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 two short papers applying two of the models presented in the course to real-world situations in the context of business.

Instructor(s): P. Pena Terms Offered: Spring
Prerequisite(s): ECON 10000 (or ECON 19800)

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.

Instructor(s): J. List, S. Levitt Terms Offered: Spring

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: Autumn

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.

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 10000 (or 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 20110

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 10000 (or 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 10000 (or 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: Autumn Winter
Prerequisite(s): ECON 20000 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 10200 (or ÉCON 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 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.

Instructor(s): R. Corbi  Terms Offered: Autumn
Prerequisite(s): ECON 20100 or ECON 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
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): R. Fang  Terms Offered: Autumn Spring Winter
Prerequisite(s): ECON 20100 (or ECON 10000 for declared business economics specialization). No first-year students.

**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): C. Roark  Terms Offered: Autumn
Prerequisite(s): MATH 13300/15300/16300/16310 and ECON 10200/20000/20010 (Standard Economics students should complete the third quarter calculus and ECON 20000/20010 before taking ECON 21010. Students who have declared business economics specialization should complete the third quarter of calculus at least ECON 10200 before taking ECON 21010.)

**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.**

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 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.

Instructor(s): Staff  Terms Offered: Autumn
Prerequisite(s): ECON 20200/20210 and ECON 21020/21030
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!).
Instructor(s): S. Levitt Terms Offered: TBD
Prerequisite(s): ECON 10000/19800/20000/20010 and STAT 22000/23400/24400 (or ECON 21010)

ECON 21220. 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.
Instructor(s): A. Hortacsu Terms Offered: TBD
Prerequisite(s): CMSC 12300/15200/16200 and ECON 21020 (ECON 21030 Honors Econometrics preferred)

ECON 21330. 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.
Instructor(s): S. Bonhomme Terms Offered: Not offered in 2019-2020
Prerequisite(s): CMSC 12300/15200/16200 and ECON 21020 (ECON 21030 Honors Econometrics preferred)

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

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.
Instructor(s): J. Heckman Terms Offered: Autumn
Prerequisite(s): ECON 10000/19800/20000/20010 AND STAT 22000/23400/24400/24410/ECON 21010 (Lab students require one economics course)

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): Staff Terms Offered: Autumn
Prerequisite(s): ECON 20100 and ECON 21020 (or ECON 21030); No first-year students.

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.
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 Terms Offered: Autumn
Prerequisite(s): ECON 20100
Equivalent Course(s): ECON 32000

ECON 22410. UChicago Economics: The People and the Seminal Ideas. 100 Units.
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): ECON 20200. Third- or fourth-year standing.

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); ECON 21020 and ECON 23950 are strongly recommended.

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).
Instructor(s): N. Stokey Terms Offered: Autumn
Prerequisite(s): ECON 20200 (or ECON 20210) and MATH 20300 (or MATH 20310 or MATH 20700)

ECON 23230. 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 and end of speculative bubbles, runs and credit crunches. We will study capital flows in the open macroeconomy and the effects of sudden stops. Furthermore, we will analyze sovereign debt crises and defaults – their causes and consequences for labor market, banking sector, and aggregate income. Looking at some recent episodes, we will also discuss fiscal policy.

Instructor(s): N. Balke
Terms Offered: Spring
Prerequisite(s): ECON 23950 and ECON 21020 (or ECON 21030)

ECON 23240. Quantitative Analysis of Macroeconomic Policy. 100 Units.
This course focuses on application and covers three commonly used models in macroeconomics, including structural VAR, DSGE models and state space and regime switching models. Various research tools developed to implement these models, such as how to identify structural shocks and analyze their dynamic effects, and how to conduct counter-factual policy simulations, will be discussed and implemented.

Instructor(s): Staff
Terms Offered: Winter
Prerequisite(s): ECON 21200 or STAT 26100 or BUSN 41202 or Instructor Consent

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
Prerequisite(s): ECON 20200 (or ECON 20210) and ECON 21020 (or ECON 21030)

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.

Instructor(s): U. Akcigit
Terms Offered: TBD
Prerequisite(s): ECON 20200 (or ECON 20210) and ECON 21020 (or ECON 21030)

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.

Instructor(s): Staff
Terms Offered: Autumn Spring
Prerequisite(s): ECON 20200; ECON 21020 or 21030 strongly recommended.

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 guests...
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.

Instructor(s): A. Sanderson and Staff
Terms Offered: May be offered in 2020-2021
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): BPRO 28900, PBPL 28920

**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: Winter
Prerequisite(s): ECON 20200/20210 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 25120. 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 STAT 23400 (or ECON 21010)

**ECON 25130. China’s Economic Development & Transition. 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.

Instructor(s): P. Pena
Terms Offered: Autumn
Prerequisite(s): Econ 20100/20110
ECON 26250. Public Sector Economics. 100 Units.
The concept of ‘market distortion’ is used to formulate measurements, explanations, and consequences of
government activities including tax systems, expenditure programs, and regulatory arrangements. Topics
include cross-country comparisons of government behavior, predicting microlevel responses to policy, measuring
and evaluating the incidence of government activity, alternative models of government decision-making, and the
application of public finance to other economics fields.
Instructor(s): Casey Mulligan Terms Offered: Autumn
Prerequisite(s): College Students - Econ 20200 or 20210 and 21020
Equivalent Course(s): ECON 36200

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
Prerequisite(s): ECON 20100
Equivalent Course(s): PBPL 32631, ENST 26500

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): ENST 26530, PPHA 32510, PBPL 26530

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): PPHA 32520, PBPL 26531, ENST 26531

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): EDSO 26700, PBPL 26705

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. Leitzel Terms Offered: Autumn
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 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?
Instructor(s): N. Balke Terms Offered: Autumn
Prerequisite(s): Econ 23950

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.
Instructor(s): Meltzer, D Terms Offered: Spring
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): PPHA 38300, PBPL 28300, CCTS 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.
Instructor(s): P. Tebaldi Terms Offered: Spring
Prerequisite(s): ECON 20100 required, ECON 21020 strongly preferred

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.
Instructor(s): M. Dinerstein Terms Offered: Spring
Prerequisite(s): ECON 20100/20110

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 (or ECON 21010)

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: Spring
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
Prerequisite(s): ECON 20100 required; STAT 23400, ECON 21010, or ECON 21020 strongly recommended
Equivalent Course(s): PBPL 23200

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
Instructor(s): J. Wong Terms Offered: Autumn Spring Winter
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

ECONOMICS (ECMA) COURSES

ECMA 30770. Decision and Strategy. 100 Units.
ECON 20700 or 30770 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): B. Brooks Terms Offered: Winter
Prerequisite(s): Prerequisites for Undergraduates: ECON 20100 (or Econ 20110), and MATH 20300 (or Math 20310 or Math 20700), and STAT 24400 (or STAT 24410)

ECMA 30780. Decision and Strategy II. 100 Units.
We continue the formal introduction to decision theory and game theory begun in ECMA 30770, 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): ECMA 30770 or consent of instructor

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.
Instructor(s): P. Reny Terms Offered: Winter
Prerequisite(s): FQ for Undergraduates: ECON 20100 (or Econ 20110), and MATH 20300 (or Math 20310 or Math 20700), and STAT 24400 (or STAT 24410)
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.
Instructor(s): J. Hardwick Terms Offered: Autumn
Prerequisite(s): PQs for Undergraduates: Econ 21030 or Econ 21110 or Econ 21130

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.
Instructor(s): T. Lamadon Terms Offered: Autumn
Prerequisite(s): Prerequisites for Undergraduates: ECON 21020 OR ECON 21030

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.
Instructor(s): T. Lamadon Terms Offered: Autumn
Prerequisite(s): PQs for Undergraduates:ECON 21010/21010 and ECON 21020/21030

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 version control 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.
Instructor(s): Faculty TBD Terms Offered: TBD
Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20550 if BUSN 36110
Application Development taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course. BUSN 20550 (and BUSN 36110) cannot count toward the standard economics major electives or the business economics specialization electives.

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.
Instructor(s): Faculty TBD Terms Offered: TBD
Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20100 if BUSN 30000 Financial Accounting taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and
schedule details: https://tinyurl.com/y8wz3oeg. All first year college students are restricted from enrolling into this course.

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.

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20101 if BUSN 30001 Cost Analysis and Internal Controls taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oeg

BUSN 20140. Accounting and Financial Analysis. 100 Units.
The course is designed to provide the tools necessary to conduct a reasonably sophisticated financial statement analysis. The focus is on the use of financial statements, although this requires some understanding of the process by which financial statements are produced. We will not limit our study to the financial statements per se. We will also work with supplemental disclosures, which help the analyst to interpret the financial statements and to understand better the economic transactions that gave rise to them. The techniques we will employ will be useful for both equity and credit analysis. Although this course does not cover forecasting or valuation per se, a thorough understanding of financial reporting issues is critical to being able to do a thoughtful financial forecast and valuation. As a result, this course will be especially useful as a prelude to Financial Statement Analysis (BUSN 20150/30130). Specific topics include basic concepts of financial statement analysis, revenue recognition, leasing, financial analysis when there is discontinuity (acquisitions, divestitures, accounting changes), accounting for income taxes, earnings per share. Other topics may be included as well.

Terms Offered: Spring

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20140 if BUSN 30116 Accounting and Financial Analysis taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oeg. All first year college students are restricted from enrolling into this course. Financial Accounting (BUSN 20100 or BUSN 30000) is a strict prerequisite.

BUSN 20150. Financial Statement Analysis. 100 Units.
This course teaches you how to analyze financial statements in order to develop financial statement models, assess credit risk, and, ultimately, value a company. The course provides both a framework and the tools necessary to analyze financial statements. Its primary objective is to advance your understanding of how financial reporting can be used in a variety of decisions (e.g., lending and investment decisions) and analyses (e.g., financial distress and bankruptcy prediction). It is applied in nature and stresses the use of actual financial statements. Throughout the course, I draw heavily on real business examples and use cases to illustrate the application of the techniques and tools. Topics include traditional ratio analysis techniques, accounting analysis (i.e., identifying earnings management and accounting quality issues), and financial risk assessment. The second part of the course focuses on equity valuation, e.g., the preparation of pro forma financial statements, and the use of various valuation models. While students with a multitude of interests will benefit from this course, students with an interest in investment banking, equity or credit analysis, consulting, strategy, corporate finance, or management will find this course particularly relevant.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20150 if BUSN 30130 Financial Statement Analysis taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oeg. All first year college students are restricted from enrolling into this course. Financial Accounting (BUSN 20100 or BUSN 30000) is a strict prerequisite.

Entrepreneurship Courses

BUSN 20160. Accounting for Entrepreneurship. 100 Units.
This course provides the core set of tools needed to effectively provide the accounting functions for private, entrepreneurial companies. The course follows the life-cycle of a company that begins life as a start-up, and the course covers the accounting-related financial metrics that are needed by an entrepreneur. We will cover topics relevant at the earliest states of a business, such as setting up the initial accounting infrastructure, through to the companies exit to a strategic buyer, a private equity firm or an IPO.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Booth Book Fee may be assessed. Cannot enroll in BUSN 20160 if BUSN 30121 Accounting for Entrepreneurship: From Start-Up through IPO taken previously. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oeg. All first year college students are restricted from enrolling into this course.

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. Paralleling the course content is the YourCo ‘game’ in which teams of four to five students simulate building a new venture through the first 18 months of the life of a startup. At the beginning of the class, teams describe a product or service they would like to bring to market, determine the necessary seed funding amount, and outline current staffing and development status. Throughout the quarter, students explore the critical activities required to engage customers, build their product or service, scale operations and build teams. Each week, teams have specific written deliverables for their ‘company’ based on the course material. Assignments include identifying key hires, choosing an initial target customer set, executing a marketing campaign, creating a sales pitch, completing a development or production plan, identifying important strategic partners, and determining next round funding requirements. ‘Game’ points are awarded based on feasibility of actions, creativity of solutions, and adherence to seed budget constraints. The course content and structure is applicable to all types of businesses. Class projects range from high tech commercialization to retail concepts to small manufacturing firms. Through class lectures, ‘game’ assignments, and real world cases, the course covers such topics as new product innovation; building a start-up management team; identifying target customers; inexpensive promotion/advertising techniques; professionalizing a sales process; and leveraging strategic partners. Emphasis is placed on marketing and sales for new enterprises, because this is a major area of entrepreneurial weakness.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20330 if BUSN 34103 Building the New Venture taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20340 if BUSN 34104 Special Topics in Entrepreneurship: Developing a New Venture (New Venture Challenge) taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course. Consent only: Students will have passed through the first round of the College New Venture Challenge.

BUSN 20920. Social Entrepreneurship and Innovation. 100 Units.

TBD

Terms Offered: TBD

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20400 if BUSN 35000 Investments taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Terms Offered: Autumn

Prerequisite(s): There are no enforced prerequisites but Investments (Business 20400/35000) is helpful. This course is not open to MBA students. Cannot enroll in BUSN 20405 if BUSN 35100 Financial Instruments taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20410 if BUSN 35200 Corporation Finance taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course. Financial Accounting (BUSN 20100 or 30000) required. Investments (BUSN 20400 or 35000) strongly recommended.

Management Courses

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20701 if BUSN 38001 Managing in Organizations taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20702 if BUSN 38002 Managerial Decision Making taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20710 if BUSN 38120 The Study of Behavioral Economics taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

Marketing Courses

BUSN 20600. Marketing Management. 100 Units.
The objective of the course is to provide an introduction 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 that are used to support the framework
are also introduced. GOALS: 1. Introduce marketing strategy and the 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 (4Ps) - 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 half of each class is discussion of business cases. Remainder of the class is dedicated to the presentation and discussion of theories, concepts, analytical techniques and empirical findings useful in marketing management. Study groups of 4 to 5 students will work on exercises and brief in-class presentations using tools from lectures. Students will also write-up (typically 1 to 2 pages long) several cases individually using a format provided in class. Content includes some light quantitative work. This course is not open to MBA students.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20600 if BUSN 37000 Marketing Strategy taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20610 if BUSN 37202 Pricing Strategies taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): BUSN 20600 or BUSN 37000 required prereq. Previous stats background helpful. This course is not open to MBA students. Cannot enroll in BUSN 20620 if BUSN 37105 Data Science for Marketing Decision Making taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20500 if BUSN 40000 Operations Management: Business Process Fundamentals taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20510 if BUSN 36106 Managerial Decision Modeling taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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 inter- 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.

Terms Offered: Spring

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20520 if BUSN 40101 Supply Chain Strategy and Practice taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20800 if BUSN 41201 Big Data taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20810 if BUSN 41204 Machine Learning taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

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.

Instructor(s): Faculty TBD Terms Offered: TBD

Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20820 if BUSN 41203 Financial Econometrics taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and
schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

Strategy and the Business Environment Courses

**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 determination of exchange rates and interest rates, the management of foreign exchange risk, international capital flows, debt and currency crises, international monetary and exchange rate regimes, the roles of the international financial institutions in developing countries, and other characteristics of international financial markets.
Instructor(s): Faculty TBD Terms Offered: TBD
Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20230 if BUSN 33502 International Financial Policy taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.

**BUSN 20900. Competitive Strategy. 100 Units.**
The course applies microeconomics (including elements of price theory, game theory, and industrial organization) to analyze decisions firms face in business environments. There will be specific focus on strategic decisions and the factors that influence firms' competitive advantages. Class time will be devoted to lectures and case discussions. Topics covered include sources of competitive advantage, scope of the firm, efficient performance, pricing, entry and exit, vertical structure, and network externalities.
Instructor(s): Faculty TBD
Prerequisite(s): This course is not open to MBA students. Cannot enroll in BUSN 20900 if BUSN 42001 Competitive Strategy taken previously. Booth Book Fee may be assessed. Refer to FAQ webpage for registration and schedule details: https://tinyurl.com/y8wz3oge. All first year college students are restricted from enrolling into this course.