Dietrich College Interdisciplinary Majors

When addressing complex issues, we often rely on approaches that take advantage of a variety of relevant disciplines. The college houses the special category of “interdepartmental majors” for programs where this interdisciplinary approach is most pronounced and in which the varied disciplinary perspectives are most fully integrated. These majors are presented here separately, rather than as departmentally-based options, to reflect and underscore their sponsorship by more than one academic department and the unique features that follow from this structure.

Interdepartmental majors are administered by the academic department of the major’s faculty advisor.

The Major in Economics and Politics

Politics and economics are deeply interconnected. Political institutions and decision-making impact economic growth, income distribution, and many other aspects of economic life. Both fiscal and monetary policies affect the economy, but these policies are often employed with political considerations in mind and can influence political activity. For example, while the United Nations is often thought of in purely political terms, the Security Council can and does impose sanctions on countries—an example of an economic policy used for political change.

The Economics and Politics major is offered jointly between the Undergraduate Economics Program (https://www.cmu.edu/tepper/programs/undergraduate-economics/) (UEP) and the Carnegie Mellon Institute for Security and Technology (https://coursescatalog.web.cmu.edu/schools-colleges/dietrichcollegeofhumanitiesandsocialsciences/instituteforpoliticsandstrategy/www.cmu.edu/cmist/) (CMIST). Students are equal members of both academic units and receive advising from both units. The major will appeal to any student interested in the design, evaluation, and political implementation of policy. It will be especially attractive to students considering careers in politics, government agencies, political and business consulting, lobbying, or the law.

The BS in Economics and Politics is an interdisciplinary major. The major will develop the political context and underpinnings of economic policy making. It will explore how political institutions resolve the tradeoffs and disagreements associated with policymaking and how they can facilitate or impede desirable economic outcomes.

CMIST strengths lie in topics such as emerging technology, national security, and grand strategy. Economic policy is one facet of grand strategy, through which governments pursue domestic and international goals. It will enable students to understand economic statecraft from a broad perspective. This major will address key issues such as how multilateral economic institutions such as the IMF and World Bank use economic coercion. Whether coercion is successful or not depends not only on the levers of power but on also on variations in regime structures, alongside complex linkages in the international economy. For example, the viability of the “Euro Zone” depends on whether the political-economic agreements necessary to mitigate institutional weaknesses are politically feasible or destined to fail.

Economics and Politics is available as both a primary and an additional major. The requirements are the same for both.

Curriculum

Students must earn a grade of “C” or better in all courses taken in the Department of Economics (73-xxx).

Mathematics

Students must complete all of the following courses.

- 21-120 Differential and Integral Calculus (10 units)
- 21-112 or 21-112 II
- 21-256 Multivariate Analysis (9 units)
- 21-259 or 21-259 Calculus in Three Dimensions

Foundations (36 units)

Students must complete all of the following courses.

- 73-102 Principles of Microeconomics (9 units)
- 73-104 Principles of Microeconomics Accelerated (9 units)
- 73-103 Principles of Macroeconomics (9 units)
- 84-104 Decision Processes in American Political Institutions (9 units)

- 84-275 Comparative Politics (9 units)

*Students who place out of 73-102 based on the economics placement exam will receive a pre-req waiver for 73-102 and are waived from taking 73-102

Core (63 units)

Students must complete all of the following courses.

- 73-230 Intermediate Microeconomics (9 units)
- 73-240 Intermediate Macroeconomics (9 units)
- 73-265 Economics and Data Science (9 units)
- 73-274 Econometrics I (9 units)
- 84-226 International Relations (9 units)
- 84-266 Research Design for Political Science (9 units)
- 84-310 International Political Economy (9 units)

Communication (9 units)

Students must complete one course from the following list.

- 73-270 Professional Communication for Economists (9 units)
- 84-250 Writing for Political Science and Policy (9 units)

Electives (27 units)

Majors are required to take 27 units (three courses) from the elective lists below. At least one course (9 units) must be taken from Economics (73-xxx) and at least one course (9 units) must be taken from the Carnegie Mellon Institute for Security and Technology (84-xxx). Students may complete electives through coursework in the Carnegie Mellon University Washington Semester Program (CMU/WSP) (https://www.cmu.edu/ips/cmuwsp/).

Economics Electives

- 73-328 Health Economics (12 units)
- 73-332 Political Economy (9 units)
- 73-338 Financial Crises and Risk (9 units)
- 73-352 Public Economics (9 units)
- 73-353 Financial Regulation in the Digital Age (9 units)
- 73-359 Benefit-Cost Analysis (9 units)
- 73-365 Firms, Market Structures, and Strategy (9 units)
- 73-421 Emerging Markets (9 units)
- 73-427 Sustainability, Energy, and Environmental Economics (9 units)

International Relations and Political Science Electives

- 84-200 Security War Game Simulation (6 units)
- 84-252 Briefing in the Policy World (6 units)
- 84-303 International Human Rights (6 units)
- 84-304 In the News: Analysis of Current National Security Priorities (6 units)
- 84-306 Latin American Politics (9 units)
- 84-307 Economic and Political History of Contemporary China (9 units)
- 84-312 Terrorism in Sub-Saharan Africa (6 units)
- 84-313 International Organizations and Law (Taught in Washington, DC through CMU/WSP) (6 units)
- 84-315 Political Economy of International Migration (9 units)
- 84-316 Political Economy of Transatlantic Partnership (9 units)
- 84-317 Defense Resourcing: From Strategy to Execution (6 units)
- 84-318 Politics of Developing Nations (9 units)
- 84-319 Civil-Military Relations (9 units)
- 84-322 Nonviolent Conflict and Revolution (9 units)
- 84-323 War and Peace in the Contemporary Middle East (9 units)
- 84-324 The Future of Democracy (9 units)
- 84-325 Contemporary American Foreign Policy (9 units)
- 84-327 Repression and Control in Dictatorships (9 units)
- 84-328 Military Strategy and Doctrine (9 units)
- 84-329 Asian Strategies (9 units)
- 84-330 The Shading of Democracy, The Influence of Identity on American Politics (Taught in Washington, DC through CMU/WSP) (6 units)
Students must complete all of the following courses.

84-331 Money, Media, and the Power of Data in Decisionmaking Taught in Washington, DC, through CMU/WSP 6
84-334 The History and Practice of Economic Statecraft Taught in Washington, DC, through CMU/WSP 6
84-335 US China Relations Taught in Washington, DC, through CMU/WSP 6
84-336 Implementing Public Policy: From Good Idea To Reality Taught in Washington, DC, through CMU/WSP 12
84-337 Biomedical Science Research, Policy, and Governance Taught in Washington, DC, through CMU/WSP 6
84-339 Seminar in Public Policy Research Taught in Washington, DC, through CMU/WSP 12
84-348 Advocacy, Policy and Practice Taught in Washington, DC, through CMU/WSP 6
84-352 Representation and Voting Rights 9
84-354 The American Experiment: Unravelling the US Electoral System Taught in Washington, DC, through CMU/WSP 6
84-360 CMU/WSP Internship Seminar Taught in Washington, DC, through CMU/WSP 12
84-362 Diplomacy and Statecraft 9
84-365 The Politics of Fake News and Misinformation 9
84-369 Decision Science for International Relations 9
84-370 Nuclear Security & Arms Control 9
84-372 Space and National Security 9
84-373 Emerging Technologies and International Law 9
84-374 Technology, Weapons, and International Conflict 9
84-380 US Grand Strategy 9
84-383 Cyber Policy as National Policy 6
84-386 The Privatization of Force 9
84-387 Remote Systems and the Cyber Domain in Conflict 9
84-388 Concepts of War and Cyber War 6
84-389 Terrorism and Insurgency 9
84-390 Social Media, Technology, and Conflict 9
84-393 Legislative Decision Making: US Congress 9
84-402 Judicial Politics and Behavior 9
84-405 The Future of Warfare 9
84-421 Advanced Topics in American Politics 9
84-440 Collaborative Research in Political Science Var.

Additional Electives
19-411 Science and Innovation Leadership for the 21st Century: Firms, Nations, and Tech 9
19-425 Sustainable Energy for the Developing World 9
70-365 International Trade and International Law 9
70-430 International Management 9
79-280 Coffee and Capitalism 9
79-318 Sustainable Social Change: History and Practice 9
80-135 Introduction to Political Philosophy 9
80-136 Social Structure, Public Policy & Ethics 9
80-321 Causation, Law, and Social Policy 9
80-335 Social and Political Philosophy 9
80-348 Health, Human Rights, and International Development 9
80-447 Global Justice 9
88-223 Policy in a Global Economy 9
88-366 Behavioral Economics of Poverty and Development 9
88-419 International Negotiation 9
88-444 Public Policy and Regulations 9

CAPSTONE (15-21 units)

Students must complete all of the following courses.

84-450 Policy Seminar 6
73-497 Senior Project or Senior Honors Thesis 9

Note: Students in the BS in Economics and Politics who complete a Dietrich or Tepper Honors Thesis in economics may use 73-497 (Senior Project) as an economics elective.

DOUBLE-COUNTING RESTRICTION

A maximum of four courses may double count with another major or minor.

SAMPLE Four Year Plan

These sample curricula represent a plan for completing the requirements for the B.S. in Economics and Politics. Economics and Politics students are encouraged to spend a semester studying and interning in Washington, DC, through the CMU/WSP (http://www.cmu.edu/ips/cmuwsp/), and/or study abroad. The plan below demonstrates that a semester off-campus fits well into the curriculum. Students may declare the BS in Economics and Politics as early as the second semester of the freshman year and should consult frequently with the Economics and Politics advisors about their course of study. Please note that this is only a sample plan of study and not the only possible plan of study. The Economics and Politics major and Dietrich College General Education curricula provide a high degree of flexibility in sequencing and coursework. Double counting between the major and General Education requirements is unlimited. The plan below shows a very conservative view of double counting.

First-Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>21-120 Differential and Integral Calculus</td>
<td>21-256 Multivariate Analysis</td>
</tr>
<tr>
<td>36-200 Reasoning with Data</td>
<td>73-103 Principles of Microeconomics</td>
</tr>
<tr>
<td>73-102 Principles of Macroeconomics</td>
<td>84-275 Comparative Politics</td>
</tr>
<tr>
<td>84-104 Decision Processes in American Political Institutions</td>
<td>First-Year Writing</td>
</tr>
<tr>
<td>Grand Challenge Seminar</td>
<td>Disciplinary Perspectives: Humanities</td>
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</table>

Second-Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>73-230 Intermediate Microeconomics</td>
<td>73-340 Intermediate Macroeconomics</td>
</tr>
<tr>
<td>73-240 Econometrics I</td>
<td>73-240 Econometrics II</td>
</tr>
<tr>
<td>84-226 International Relations</td>
<td>Communication Course (84-250 or 73-270)</td>
</tr>
<tr>
<td>84-266 Research Design for Political Science</td>
<td>General Education</td>
</tr>
<tr>
<td>84-310 International Political Economy</td>
<td>General Education</td>
</tr>
</tbody>
</table>

Third-Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>CMU/WSP or Study Abroad</td>
</tr>
<tr>
<td>General Education</td>
<td>Explore</td>
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<tr>
<td>General Education</td>
<td>Explore</td>
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<tr>
<td>General Education</td>
<td>Explore</td>
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<tr>
<td>Economics &amp; Politics Elective</td>
<td>Explore</td>
</tr>
</tbody>
</table>

Fourth-Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>73-497 Senior Project</td>
<td>84-450 Policy Seminar</td>
</tr>
<tr>
<td>General Education</td>
<td>Explore</td>
</tr>
<tr>
<td>General Education</td>
<td>Explore</td>
</tr>
<tr>
<td>General Education</td>
<td>Explore</td>
</tr>
<tr>
<td>Economics &amp; Politics Elective</td>
<td>Explore</td>
</tr>
</tbody>
</table>

The Major in Economics and Statistics

Amanda Mitchell, Statistics & Data Science Academic Program Manager
Stephen Pajewski, Economics Senior Academic Advisor and Program Manager

Statistics & Data Science Location: Baker Hall 129
statadvising@andrew.cmu.edu (statadvising@stat.cmu.edu)

Economics Location: Tepper 2400
econprog@andrew.cmu.edu

The B.S. in Economics and Statistics is jointly advised by the Department of Statistics and Data Science and the Undergraduate Economics Program.

The Major in Economics and Statistics provides an interdisciplinary course of study aimed at students with a strong interest in the empirical analysis of economic data. With joint curriculum from the Department of Statistics and Data Science and the Undergraduate Economics Program, the major provides students with a solid foundation in the theories and methods of both fields. Students in this major are trained to advance the understanding of economic issues through the analysis, synthesis and reporting of data using the advanced empirical research methods of statistics and econometrics. Graduates are well positioned for admission to competitive graduate programs, including those in statistics, economics and management, as well as for employment in positions requiring strong
analytic and conceptual skills - especially those in economics, finance, education, and public policy.

All economics courses counting towards an economics degree must be completed with a grade of "C" or higher.

**Curriculum**

The requirements for the B.S. in Economics and Statistics are the following:

1. **MATHEMATICAL FOUNDATIONS (PREREQUISITES) 29-42 UNITS**
   Mathematics is the language in which statistical models are described and analyzed, so some experience with basic calculus and linear algebra is an important component for anyone pursuing a program of study in Economics and Statistics.

2. **Calculus**

   Complete one of the two following sequences of mathematics courses at Carnegie Mellon, each of which provides sufficient preparation in calculus:

   **Sequence 1**
   - 21-111 Calculus I 10
   - 21-112 Calculus II 10
   - and one of the following:
     - 21-256 Multivariate Analysis 9
     - 21-259 Calculus in Three Dimensions 10
     - 21-268 Multidimensional Calculus 11

   **Sequence 2**
   - 21-120 Differential and Integral Calculus 10
   - and one of the following:
     - 21-256 Multivariate Analysis 9
     - 21-259 Calculus in Three Dimensions 10
     - 21-268 Multidimensional Calculus 11

**NOTES:**
- Passing the MSC 21-120 assessment test is an acceptable alternative to completing 21-120.
- Note: Taking/having credit for both 21-111 and 21-112 is equivalent to 21-120. The Mathematical Foundations total is then 48-49 units. The Economics and Statistics major would then total 201-211 units.

3. **Linear Algebra**

   One of the following three courses:
   - 21-240 Matrix Algebra with Applications 10
   - 21-241 Matrices and Linear Transformations 11
   - 21-242 Matrix Theory 11

   Note: 21-241 and 21-242 are intended only for students with a very strong mathematical background.

**II. Foundations 54 units**

2. **Economics Foundations 18 UNITS**

   Take one of the following courses:
   - 73-102 Principles of Microeconomics 9
   - 73-104 Principles of Microeconomics Accelerated 9
   - Take the following course:
   - 73-103 Principles of Macroeconomics 9

   *Students who place out of 73-102 based on the economics placement exam will receive a prerequisite waiver for 73-102 and are waived from taking 73-102*

   **This course requires students to complete a 4 or 5 on the AP Microeconomics exam or qualifying score on the IB/Cambridge Exams. 73-104 will substitute for any 73-102 prerequisite requirement in other courses. 73-104 is a more rigorous introduction to microeconomics, is taught at a faster pace than 73-102, and dives a bit deeper into key topics. It is designed for students who have prior knowledge to fundamental economic concepts through AP/IB/Cambridge coursework. Enrollment in 73-104 requires special permission. Students who wish to take this course should add themselves to the 73-104 waitlist once registration opens. The Tepper School will verify the advancement placement scores and will enroll students in 73-104.

3. **Statistical Foundations 36 UNITS**

   **DATA ANALYSIS**

   Data analysis is the art and science of extracting insight from data. The art lies in knowing which displays or techniques will reveal the most interesting features of a complicated data set. The science lies in understanding the various techniques and the assumptions on which they rely. Both aspects require practice to master.

   The Beginning Data Analysis courses give a hands-on introduction to the art and science of data analysis. The courses cover similar topics but differ slightly in the examples they emphasize. 36-200 draws examples from many fields and satisfy the DC College Core Requirement in Statistical Reasoning. This course is therefore recommended for students in the college. (Note: a score of 5 on the Advanced Placement [AP] Exam in Statistics may be used to waive this requirement). 36-220 emphasizes examples in engineering.

   The Intermediate Data Analysis courses build on the principles and methods covered in the introductory course, and more fully explore specific types of data analysis methods in more depth.

   The Advanced Data Analysis courses draw on students' previous experience with data analysis and understanding of statistical theory to develop advanced, more sophisticated methods. These core courses involve extensive analysis of real data with emphasis on developing the oral and writing skills needed for communicating results.

   **Sequence 1 [For students beginning their freshman or sophomore year]**

   **Beginning**
   - Choose one of the following courses:
     - 36-200 Reasoning with Data * 9
     - 36-220 Engineering Statistics and Quality Control 9
   *A score of 5 on the Advanced Placement (AP) Exam in Statistics may be used to waive this requirement. 36-220 emphasizes examples in engineering and Architecture.

   **Intermediate**
   - Choose one of the following courses:
     - 36-202 Methods for Statistics & Data Science ** 9
     - 36-290 Introduction to Statistical Research Methodology 9
     - 36-309 Experimental Design for Behavioral & Social Sciences 9
   * Or extra data analysis course in Statistics
   ** Must take prior to 36-401 Modern Regression, if not, an additional Advanced Statistics Elective is required.

   **Advanced Statistics Elective**
   - Choose two of the following courses:
     - 36-303 Sampling, Survey and Society 9
     - 36-311 Statistical Analysis of Networks 9
     - 36-313 Statistics of Inequality and Discrimination 9
     - 36-315 Statistical Graphics and Visualization 9
     - 36-318 Introduction to Causal Inference 9
     - 36-460 Special Topics: Sports Analytics 9
     - 36-461 Special Topics: Statistical Methods in Epidemiology 9
     - 36-462 Special Topics: Methods of Statistical Learning 9
     - 36-463 Special Topics: Multilevel and Hierarchical Models 9
     - 36-464 Special Topics: Psychometrics: A Statistical Modeling Approach 9
     - 36-465 Special Topics: Conceptual Foundations of Statistical Learning 9
     - 36-466 Special Topics: Statistical Methods in Finance 9
It is possible to substitute advisor approval to enroll), and new Special Topics (students need approval to enroll). The Department of Statistics provides an introductory course for the major.

Undergraduate Research 9
36-493 Sports Analytics Capstone 9
36-497 Corporate Capstone Project 9

Advanced Statistics Electives
Choose three of the following courses:
36-303 Sampling, Survey and Society 9
36-311 Statistical Analysis of Networks 9
36-313 Statistics of Inequality and Discrimination 9
36-315 Statistical Graphics and Visualization 9
36-318 Introduction to Causal Inference 9
36-460 Special Topics: Sports Analytics 9
36-461 Special Topics: Statistical Methods in Epidemiology 9
36-462 Special Topics: Methods of Statistical Learning 9
36-463 Special Topics: Multilevel and Hierarchical Models 9
36-464 Special Topics: Psychometrics: A Statistical Modeling Approach 9
36-465 Special Topics: Conceptual Foundations of Statistical Learning 9
36-466 Special Topics: Statistical Methods in Finance 9
36-467 Special Topics: Data over Space & Time 9
36-468 Special Topics: Text Analysis 9
36-469 Special Topics: Statistical Genomics and High Dimensional Inference 9
36-490 Undergraduate Research 9
36-493 Sports Analytics Capstone 9
36-497 Corporate Capstone Project 9

**All Special Topics are not offered every semester, and new Special Topics are regularly added. See section 5 for details.

III. Disciplinary Core 136-139 units

1. Economics Core 45 UNITS
73-230 Intermediate Microeconomics 9
73-240 Intermediate Macroeconomics 9
73-270 Professional Communication for Economists 9
73-265 Economics and Data Science 9
73-274 Econometrics I 9
73-374 Econometrics II 9

2. Statistics Core 36 UNITS
Take one of the following courses:
36-235 Probability and Statistical Inference I ** 9
36-225 Introduction to Probability Theory 9
Take one of the following courses:
36-236 Probability and Statistical Inference II ** 9
36-226 Introduction to Statistical Inference 9
36-326 Mathematical Statistics (Honors) 9
Take both of the following courses:
36-401 Modern Regression 9
36-402 Advanced Methods for Data Analysis 9

*In order meet the prerequisite requirements for the major, a grade of C or better is required in 36-235 (or equivalents), 36-226 and 36-401.

**It is possible to substitute 36-226 or 36-326 for 36-236. 36-236 is the standard introduction to probability, 36-219 is tailored for engineers and computer scientists, 36-218 is a more mathematically rigorous class for Computer Science students and more mathematically advanced Statistics students (Statistics students need advisor approval to enroll), and 21-325 is a rigorous Probability Theory course offered by the Department of Mathematics.

Please note that students who complete 36-235 are expected to take 36-236 to fulfill their theory requirements. Students who choose to take 36-225 instead will be required to take 36-226 afterward, they will not be eligible to take 36-236.

3. Statistical Computing 19-21 UNITS
Take one of the following two courses:
15-110 Principles of Computing 10
15-112 Fundamentals of Programming and Computer Science 12

Complete the following course:
36-350 Statistical Computing 9

4. Advanced Electives 36 units
Students must take two advanced Economics elective courses (numbered 73-300 through 73-495, excluding 73-374) and two (or three - depending on previous coursework, see Section 3) advanced Statistics elective courses (numbered 36-303, 36-311, 36-313, 36-318, 36-46x, 36-490, 36-493 or 36-497).

Total number of units for the major 219-235 Units
Total number of units for the degree 360 Units

Professional Development
While not required, students are strongly encouraged to take advantage of professional development opportunities and/or coursework. One option is a fall-only course that provides information about careers in Economics, job search strategies, and research opportunities. The Department of Statistics and Data Science also offers a series of workshops pertaining to resume preparation, graduate school applications, careers in the field, among other topics. Students should also take advantage of the Career and Professional Development Center.

Additional Major in Economics and Statistics
Students who elect Economics and Statistics as an additional major must fulfill all Economics and Statistics degree requirements. Majors in many other programs would naturally complement an Economics and Statistics Major, including Tepper’s undergraduate business program, Social and Decision Sciences, Policy and Management, and Psychology.

With respect to double-counting courses, it is departmental policy that students must have at least six courses (three Economics (73-xxx) and three Statistics (36-xxx)) that do not count for their primary major. If students do not have at least three ECON and three STA classes, they will need to take additional data analysis or economics electives, depending on where the double-counting issue is.

Students are advised to begin planning their curriculum (with appropriate advisors) as soon as possible. This is particularly true if the other major has a complex set of requirements and prerequisites or when many of the other major’s requirements overlap with the requirements for a Major in Economics and Statistics.

Substitutions and Waivers
Many departments require Statistics courses as part of their Major or Minor programs. Students seeking transfer credit for those requirements from substitute courses (at Carnegie Mellon or elsewhere) should seek permission from their advisor in the department setting the requirement. The final authority in such decisions rests there. The Department of Statistics and Data Science does not provide approval or permission for substitution or waiver of another department’s requirements.

If a waiver or substitution is made in the home department, it is not automatically approved in the Department of Statistics and Data Science. In many of these cases, the student will need to take additional courses to satisfy the Economics and Statistics major requirements. Students should discuss this with a Statistics advisor when deciding whether to add an additional major in Economics and Statistics.

Sample Program
The following sample program illustrates one way to satisfy the requirements of the Economics and Statistics Major. Keep in mind that the
The Major in Ethics, History, and Public Policy

Professor Steven Schlossman, Director of Ethics, History, and Public Policy, History Department
Location: Baker Hall 236A, 412-268-2880
sfs@andrew.cmu.edu

Dr. Alexandra Garnhart-Bushakra, Academic Program Manager, History Department
Location: Baker Hall 240, 412-268-2880

Patrick Doyle, Academic Program Manager, Philosophy Department
Location: Baker Hall 161L, 412-268-3704
pdoyle2@andrew.cmu.edu
https://go.oncehub.com/PatDoyle (https://go.oncehub.com/PatDoyle/)

The B.A./B.S. in Ethics, History, and Public Policy (EHPP) is an interdisciplinary major offered jointly by the Departments of History and Philosophy.

Preparing students to be leaders is a vital goal of colleges and universities in every democratic society. The intellectual challenges facing public and private sector leaders have expanded dramatically since the pioneering EHPP program began in 1996, but the need remains as great as ever for broadly educated, technologically skilled leaders. EHPP prepares students to demonstrate sophistication and flexibility in their command of interdisciplinary knowledge; deep historical understanding of how modern-day policy problems have emerged and evolved; and clear, rational criteria for ethical and socially just decision making. The curriculum provides students with a strong humanistic foundation for developing such high-level, historically grounded, and ethically attuned leadership capacities.

The major must be taken for a letter grade and must be passed with a grade of “C” or better. Students can double count any course for the major with another major or minor, with the exception of Social and Political History, for which a student can double count a maximum of two courses.

I. Foundation Courses in History and Philosophy 18 units

*Choose one of the following two courses:

- 79-189 Democracy and History: Thinking Beyond the Self
- 79-248 U.S. Constitution & the Presidency

*Choose one of the following two courses:

- 80-130 Introduction to Ethics
- 80-330 Ethical Theory

II. Ethics and Policy Core 36 units

*Choose four of the courses in the following:

No more than one course may be taken at the 100 level and at least one course must be taken at the 300 level or above.

- 80-135 Introduction to Political Philosophy
- 80-136 Social Structure, Public Policy & Ethics
- 80-208 Critical Thinking
- 80-221 Philosophy of Social Science
- 80-234 Race, Gender, and Justice
- 80-244 Environmental Ethics
- 80-245 Medical Ethics
- 80-249 AI, Society, and Humanity
- 80-305 Game Theory
- 80-306 Decision Theory
- 80-321 Causation, Law, and Social Policy
- 80-324 Philosophy of Economics
- 80-330 Ethical Theory
- 80-335 Social and Political Philosophy
- 80-336 Philosophy of Law
- 80-348 Health, Human Rights, and International Development
- 80-447 Global Justice

III. History and Policy Core 36 units

*Choose four of the courses below:

- 79-175 Moneyball Nation: Data in American Life
- 79-204 American Environmental History
- 79-212 Jim Crow America
- 79-215 Environmental Justice from Conservation to Climate Change
- 79-234 Technology and Society
- 79-242 African American History: Reconstruction to the Present
- 79-248 U.S. Constitution & the Presidency
- 79-250 Voting Rights: An Introduction
- 79-278 How (Not) to Change the World
- 79-300 History of American Public Policy
- 79-320 Women, Politics, and Protest
- 79-321 Documenting Human Rights
- 79-330 Medicine and Society: Health, Healers, and Hospitals
- 79-343 Education, Democracy, and Civil Rights
- 79-370 Technology in the United States
- 79-380 Hostile Environments: The Politics of Pollution in Global Perspective

IV. Foundation Courses in Law and Social Science 18 units

*Choose two of the courses below:

- 17-200 Ethics and Policy Issues in Computing
- 19-101 Introduction to Engineering and Public Policy
- 70-332 Business, Society and Ethics
- 73-102 Principles of Microeconomics
The Major in Information Systems

In Fall semester of senior year, EHPP students will participate in an interdisciplinary capstone course that asks students to integrate their studies in Ethics and History by addressing a policy topic of contemporary national urgency (e.g., climate change, immigration, infrastructure, abortion, hate speech, reparations, law enforcement and policing, charter school fights, affirmative action, vaccination, taxation, voting rights, global justice). The Departments of History and Philosophy will alternate teaching the EPP Capstone Course.

Student may enter the EHPP major, and begin major course requirements, as early as they wish. Students should consult their advisor when planning their program.

The Major in Linguistics

Linguistics is the scientific study of human language. The central goal of Linguistics is to understand language scientifically, whether formally, as researchers, or informally, as participants in daily linguistic interactions. The foundation of the Linguistics Major is a set of rigorous core courses, informed by contemporary approaches to the study of linguistic form and meaning.

The Core courses cover the principal domains of linguistic analysis: phonetics and phonology, syntax and meaning. Students then move on to the Extended Core, which includes more advanced courses as well as courses on a wider range of topics, such as intonation and language variation. These courses are supplemented by a wide-ranging set of electives including linguistically relevant courses taught in other departments.

Primary majors complete their course of study with a Senior Thesis, a semester-long research project carried out independently with one-on-one guidance from a member of the linguistics faculty. Students may enter the Linguistics major, and begin major course requirements, as early as they wish. Students should consult their advisor when planning their program.

The Major in Information Systems

In Fall semester of senior year, EHPP students will participate in an interdisciplinary capstone course that asks students to integrate their studies in Ethics and History by addressing a policy topic of contemporary national urgency (e.g., climate change, immigration, infrastructure, abortion, hate speech, reparations, law enforcement and policing, charter school fights, affirmative action, vaccination, taxation, voting rights, global justice). The Departments of History and Philosophy will alternate teaching the EPP Capstone Course.

The Major in Linguistics

Linguistics is the scientific study of human language. The central goal of Linguistics is to understand language scientifically, whether formally, as researchers, or informally, as participants in daily linguistic interactions. The foundation of the Linguistics Major is a set of rigorous core courses, informed by contemporary approaches to the study of linguistic form and meaning.

The Core courses cover the principal domains of linguistic analysis: phonetics and phonology, syntax and meaning. Students then move on to the Extended Core, which includes more advanced courses as well as courses on a wider range of topics, such as intonation and language variation. These courses are supplemented by a wide-ranging set of electives including linguistically relevant courses taught in other departments.

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### COURSE REQUIREMENTS

#### Electives

**Primary majors choose three additional electives (27 units).** Additional majors choose four additional electives (36 or more units).

**Primary majors: see thesis requirement below.**

#### Linguistics Electives

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>60-312</td>
<td>Contemporary Linguistics</td>
<td>9</td>
</tr>
<tr>
<td>60-313</td>
<td>Linguistics I</td>
<td>9</td>
</tr>
<tr>
<td>60-314</td>
<td>Linguistics II</td>
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#### Philosophy Electives

<table>
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<tbody>
<tr>
<td>80-380</td>
<td>Philosophy of Language</td>
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</tr>
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<td>Language and Thought</td>
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#### Modern Languages

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<tbody>
<tr>
<td>82-305</td>
<td>French in its Social Contexts</td>
<td>9</td>
</tr>
<tr>
<td>82-334</td>
<td>Structure of Chinese</td>
<td>9</td>
</tr>
<tr>
<td>82-357</td>
<td>Topics in Second Language Acquisition</td>
<td>9</td>
</tr>
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#### Language Technologies Institute

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>11-411</td>
<td>Natural Language Processing</td>
<td>12</td>
</tr>
<tr>
<td>11-492</td>
<td>Speech Processing</td>
<td>12</td>
</tr>
</tbody>
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### Language Requirement

Students must successfully complete 2 semesters of foreign language study in a single language (e.g. 100 & 200 level).

### Electives

Primary majors choose three additional electives (27 units). Additional majors choose four additional electives (36 or more units).

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**Note:** all 11-xxx courses have significant Computer Science prerequisites. Interested students should check with the course instructor and with the Linguistics Academic Program Manager before registering.

### Additional Major in Linguistics

The Linguistics additional major requires a total of 13 courses. This includes 2 semesters of language study for all majors. At least three courses (not including specific language courses) must be at the 300-level or higher. Additional majors are not required to write a thesis but must take four electives (36 or more units). All courses counted towards the major must be taken for a letter grade and passed with a grade of “C” or above. Students may double count any course for the major simultaneously with another major or minor. If you are interested in obtaining an additional major in Linguistics, please reach out to the Academic Program Manager, Philosophy Department.

### The Major in Psychology and Biological Sciences

This unified major is intended to reflect the interdisciplinary nature of our current research in the fields of psychology and biology, as well as the national trend in some professions to seek individuals broadly trained in both the social and natural sciences. Students entering from the Dietrich College of Humanities and Social Sciences will earn a Bachelor of Science in Psychology and Biological Sciences. Students entering from the Mellon College of Sciences receive a Bachelor of Science in Biological Sciences and Psychology.

#### Pre-Major Requirements

The unified major specifies particular pre-major requirements in the areas of mathematical sciences and statistics, natural science, and computational reasoning. Particular courses are specified in these areas because they are prerequisites for courses required in the major and therefore they are the most efficient way to complete the general education requirements for either Dietrich College or SHS. All other general education categories can be filled in any way that satisfies the requirements of the student’s college or of the SHS program.

### Student-Defined Major Program

**Joseph E. Devine, Director and Associate Dean for Undergraduate Studies**

**Location:** Baker Hall 154F  
**jd0x@andrew.cmu.edu**  
**www.cmu.edu/dietrich/academics/degrees-majors-minors/student-defined-majors.html**

For Dietrich College students whose educational goals cannot be as adequately served by the curricula of existing majors, the college offers the opportunity to self-define a major. The procedure for establishing such a major centers on a written proposal, submitted to the Dietrich College Dean’s Office. This proposal consists of two parts:

#### Major Description and Rationale

A description of the components of the proposed program of study; a presentation of the objectives of the program of study, how it represents...
a coherent and (given available faculty, courses, and other resources) viable course of study, and the reason(s) why these objectives cannot be accomplished within one or more of the college's existing majors.

**Curriculum**

Presentation of a complete outline of all courses that will comprise the requirements for the major. These courses should be categorized in two ways: first, according to that component of the major program to which each belongs (e.g., mathematical prerequisites; research methods; theoretical perspectives; etc.); and second, a semester-by-semester outline that indicates when each course is to be taken (or, for any already taken, when taken and grade received). In addition to courses taken at Carnegie Mellon, the major's curriculum may include courses taken (or to be taken) at other schools, related projects or internships, or programs of study abroad. The minimum requirements for graduation is, as with all majors in the college, 360 units of credit and completion of the Dietrich College general education program.

Proposals and curricula are evaluated for clarity of focus, coherence and depth in related areas, and viability. Proposals should generally be developed no later than the sophomore year, and approved majors begin their program generally no later than the junior year.

The student-defined option is also possible to propose as an additional major or minor. These options extend to undergraduates from all Carnegie Mellon colleges.