Department of Social and Decision Sciences

Location: Porter Hall 208
www.cmu.edu/dietrich/sds (http://www.cmu.edu/dietrich/sds/)

The Department of Social and Decision Sciences is a multidisciplinary department that offers undergraduate programs that seamlessly combine frontier knowledge in the social sciences with the practical skills needed to excel in key decision making roles in the public, private, and non-profit sectors and in advanced graduate studies. Our students learn how to combine intellectual ideals with the realities of human and organizational behavior and to apply these lessons across a wide variety of endeavors, ranging from government service to leadership positions in the information economy.

The Department offers undergraduate majors in Behavioral Economics, Policy and Organizations, in Decision Science, and in Policy and Management. The core courses leverage our strength in decision analysis, decision making, empirical research, and policy analysis. In addition to completing this core, students also specialize in their major area through a set of required and elective courses.

Our faculty is committed to the academic success and growth of our students and many of our undergraduates work with faculty on research projects and internships. The directors of the majors are easily accessible and encourage students to talk with them about their curriculum, progress, and available opportunities. Our academic advisors are committed to working with each individual student to help them create, clarify, and meet their goals.

The Department of Social and Decision Sciences has a long history of creating innovative and prescient undergraduate programs that combine key ideas from across the social sciences into cohesive majors that allow our graduates to excel in their chosen professions or in the pursuit of advanced studies. Our emphasis on the theory and practice of individual and social decision making linked with our high-quality, multidisciplinary social science faculty, provides a solid foundation from which graduates can embrace a variety of future paths.

The Major in Behavioral Economics, Policy and Organizations

Saurabh Bhargava, Faculty Director
Location: Porter Hall 319F
DS-advisor@andrew.cmu.edu

Lizzy Stoyle, Academic Advisor
Location: Porter Hall 208G
estoyle@andrew.cmu.edu

The field of Behavioral Economics (BE) integrates perspectives from Economics and Psychology to better understand how people make consequential decisions and to leverage this understanding to improve the design of the policies, programs, and institutions that govern such behavior. The last several years has witnessed an explosion of interest in BE among governments and organizations, around the world, including here in the United States. On the policy front, this has led to the formation of government “nudge” units charged with applying BE principles to policy areas such as education, criminal justice, taxation, social benefit programs, consumer protection, and unemployment. Organizations have also aggressively sought to apply BE to encourage employee productivity, improve employee health and financial wellness, reshape managerial and hiring decisions, and to better understand and engage consumers.

The faculty in the Department of Social and Decision Sciences (SDS) has long stood at the forefront of research and teaching in BE. Our faculty has developed a reputation for working closely with governments and firms to help apply BE to address a range of issues such as predatory lending and consumer protection, bias among institutional investors, employee reward and incentive programs, behavioral barriers to retirement savings, participation in social service programs, medical adherence, pre-trial detainment of defendants, and gender and racial inequality in the workplace.

The new major of BEPO— the first of its kind among US undergraduate institutions—was designed to uniquely train students to study the behavior of individuals and organizations from the perspective of both Economics and Psychology. The major emphasizes the practical promise of BE to solve problems of importance to policymakers and organizations by directly exposing students to the expertise and experiences of SDS faculty and through the largest selection of BE courses of any university in the world. Towards this end, students will learn to collect original data, design field and laboratory experiments, analyze data and draw causal inferences, and develop interventions to improve economic outcomes and decisions. The core requirements include courses in economics, psychology, BE, and quantitative methods including experimental design and econometrics. Students who complete the major will be well positioned to enter the private sector in a role involving data or people analytics, marketing, corporate strategy, or human resources, or to enter a wide range of graduate degree programs.

Prerequisites

All Behavioral Economics, Policy and Organizations majors must complete mathematics and statistics prerequisites (see below), by the end of the sophomore year.

**Mathematics Prerequisite**
- 21-111 or 21-112 Calculus I-II
- or 21-120 Differential and Integral Calculus

**Statistics Prerequisite**
- 36-200 Reasoning with Data

Curriculum

The core curriculum in Behavioral Economics, Policy and Organizations consists of three quantitative courses, two Economic courses, two Psychology courses, two Behavioral Economics courses, and one project course.

**Quantitative Method Courses**
- 36-202 Methods for Statistics & Data Science
- 88-251 Empirical Research Methods
- 88-252 Causal Inference in the Field

**Economics Courses**
- 73-102 Principles of Microeconomics
- 73-160 Foundations of Microeconomics: Applications and Theory

**Psychology Courses**
- 88-120 Reason, Passion and Cognition *
- 88-302 Behavioral Decision Making

**Behavioral Economics Courses**
- 88-360 Behavioral Economics
- 88-367 Behavioral Economics in the Wild

**Senior Project Course**
- 88-453 Behavioral Economics, Policy, and Organizations Capstone

**Electives**

Complete at least 36 units from the following categories. Students MUST take one elective from each of the three categories. The fourth elective may be chosen from any of the categories. Note that not all elective courses are offered every year.

**Economics**
- 73-328 Health Economics
- 73-348 Behavioral Economics ***
- 73-408 Law and Economics
- 73-476 American Economic History

Students can petition that any 73-3XX or 73-4XX courses be counted as an economic elective course. Consult the Academic Advisor for more information.

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**Prerequisites**

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- or 21-120 Differential and Integral Calculus

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Students can petition that any 73-3XX or 73-4XX courses be counted as an economic elective course. Consult the Academic Advisor for more information.

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Behavioral Economics, Policy and Organizations, B.A. Sample Curriculum

*** Can ONLY count as either an Economics OR Behavioral Economics elective course. It cannot be counted in both categories.

<table>
<thead>
<tr>
<th>Behavioral Economics</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>73-348 Behavioral Economics ***</td>
<td>9</td>
</tr>
<tr>
<td>88-255 Strategic Decision Making</td>
<td>9</td>
</tr>
<tr>
<td>88-365 Behavioral Economics and Public Policy</td>
<td>9</td>
</tr>
<tr>
<td>88-366 Behavioral Economics of Poverty and Development</td>
<td>9</td>
</tr>
<tr>
<td>88-406 Behavioral Economics @ Work</td>
<td>9</td>
</tr>
<tr>
<td>88-409 Behavioral Economics Perspectives on Ethical Issues</td>
<td>9</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Psychology</th>
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</thead>
<tbody>
<tr>
<td>70-311 Organizational Behavior</td>
<td>9</td>
</tr>
<tr>
<td>70-385 Consumer Behavior</td>
<td>9</td>
</tr>
<tr>
<td>85-350 Psychology of Prejudice</td>
<td>9</td>
</tr>
<tr>
<td>85-352 Evolutionary Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-358 Pro-Social Behavior</td>
<td>9</td>
</tr>
<tr>
<td>85-375 Crosscultural Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-377 Attitudes and Persuasion</td>
<td>9</td>
</tr>
<tr>
<td>85-442 Health Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-446 Psychology of Gender</td>
<td>9</td>
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<tr>
<td>88-230 Human Intelligence and Human Stupidity</td>
<td>9</td>
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<tr>
<td>88-342 The Neuroscience of Decision Making</td>
<td>9</td>
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<tr>
<td>88-372 Social and Emotional Brain</td>
<td>9</td>
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<tr>
<td>88-380 Dynamic Decisions</td>
<td>9</td>
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<tr>
<td>88-388 Psychological Models of Decision Making</td>
<td>9</td>
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<tr>
<td>88-418 Domestic Negotiation</td>
<td>9</td>
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<tr>
<td>88-419 International Negotiation</td>
<td>9</td>
</tr>
<tr>
<td>88-435 Decision Science and Policy</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: Some courses have additional prerequisites.

Free Elective

Counts IN PLACE OF the fourth elective from any category

<table>
<thead>
<tr>
<th>Behavioral Economics, Policy and Organizations, B.A. Sample Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Fall</td>
</tr>
<tr>
<td>21-112 Differential and Integral Calculus (Or 21-111, depending on placement)</td>
</tr>
<tr>
<td>36-200 Reasoning with Data Or 36-201</td>
</tr>
<tr>
<td>73-102 Principles of Economics</td>
</tr>
<tr>
<td>Pick One (Freshman Seminar, 76-101, 79-104)</td>
</tr>
</tbody>
</table>

Junior Fall | Spring | Senior Fall | Spring |
| Economics Elective | One Additional Elective From Any Category | 88-453 Behavioral Economics, Policy, and Organizations Capstone*** | Elective or Senior Honors Thesis*** |
| Gen Ed or Elective Development | Gen Ed or Elective Elective | Elective | Elective |
| Gen Ed or Elective | Elective | Elective | Elective |
| Elective | Elective | Elective | Elective |
| Elective | Elective | Elective | Elective |

* Should be taken as the first course in Behavioral Economics, Policy and Organizations sequence. It is intended for students in their first or second year and is offered in Fall semesters. It may be taken as late as the junior year.

** 73-160 is intended for students in their first or second year; it is offered in Spring semesters. It may be taken as late as the junior year. Additionally, 73-230 Intermediate Microeconomics can serve as a substitute for 73-160 Foundations of Microeconomics: Applications and Theory.

*** Senior Honors Thesis may be substituted in the Spring term for 88-453 Behavioral Economics, Policy, and Organizations Capstone, which is only offered in the Fall term.

This is presented as a recommended plan for completing major requirements. The major can be completed in as few as two years (not that it must be), but students may not have time for other opportunities such as additional majors or study abroad. Students may declare their major as early as the third week of the spring semester in the freshman year. Students who are planning to attend the Washington Semester Program, to study abroad, to apply for the Heinz Accelerated Masters Program, or to pursue an additional major/minor may have a very different curriculum map and should consult early – and often – with the Behavioral Economics, Policy and Organizations Academic Advisor.

Additional Major

Students who elect Behavioral Economics, Policy and Organizations as an additional major must fulfill all of the requirements of the Behavioral Economics, Policy and Organizations major.

Students pursuing Decision Science with an additional major in Behavioral Economics, Policy and Organizations may only count 36-202, 73-102, 88-120, 88-251 and 88-302 toward the completion of both majors.

Students pursuing Policy and Management with an additional major in Behavioral Economics, Policy and Organizations may only count 36-202, 73-102 and 88-251 toward the completion of both majors.

Additional majors cannot count menu electives toward simultaneously fulfilling more than one major or minor. Students who are interested in an additional major in Behavioral Economics, Policy and Organizations should see the Academic Advisor of the Behavioral Economics, Policy and Organizations program.

The Major in Decision Science

Gretchen Chapman, Faculty Director
Location: Porter Hall 219F
DS-advisor@andrew.cmu.edu

Connie Angermeier and Lizzy Stoyle, Academic Advisors
Location: Porter Hall 208A and 208G
cia2@andrew.cmu.edu, estoyle@andrew.cmu.edu

The interdisciplinary field of Decision Science seeks to understand and improve the judgment and decision making of individuals, groups, and organizations. Qualified graduates can continue to PhD programs in Decision Science or related fields (e.g., psychology, business), pursue professional degrees (e.g., MBA, MD, JD, MPH), or take professional positions in business, government, consulting, or the non-profit sector. Students work with faculty and the Academic Advisor to tailor their education to their personal needs and interest.

Carnegie Mellon is one of the leading centers for the study of Decision Science - and offers the only undergraduate major that integrates analytical and behavioral approaches to decision making. Our faculty are involved in applying Decision Science in a wide variety of areas, allowing them to share practical experiences with students. These applications include medical decision making (e.g., conveying the costs and benefits of treatment options), legal decision making (e.g., reducing the effects of hindsight bias on attributions of responsibility for accidents), risk management (e.g., assessing and communicating the risks of climate change), marketing (e.g., understanding the effects of inter-temporal choice on purchasing decisions), and business (e.g., identifying unrecognized conflicts of interest).

Decision Science is grounded in theories and methods drawn from psychology, economics, philosophy, statistics, and management science. Courses in the major cover the three aspects of decision science: (a) normative analysis, creating formal models of choice; (b) descriptive research, studying how cognitive, emotional, social, and institutional factors affect judgment and choice, and (c) prescriptive interventions, seeking to improve judgment and decision making. In addition to gaining a broad education in the principles of judgment and decision making, Decision Science majors gain broadly applicable skills in research design.
and analysis. They also have the chance to think about and discuss decision making in many different areas.

The core courses present fundamental theories and results from the study of decision making, along with their application to real-world problems. They introduce students to methods for collecting and analyzing behavioral data. For example, students learn to conduct surveys (e.g., uncovering consumer or managerial preferences), design experiments (e.g., evaluating theories, comparing ways of presenting information), and evaluate the effectiveness of interventions.

The elective courses provide students with additional knowledge in areas of decision making that meet their personal, intellectual, and career goals. These courses are organized into six clusters: biological and behavioral aspects of decision making, managerial and organizational aspects, philosophical and ethical perspectives, economic and statistical methods, public policy, and research methods. Students can concentrate in one area or spread their studies across them. In addition to coursework, the department offers research opportunities for interested and qualified students. Participating in research helps students to extend their mastery of decision science, discover whether a research career is right for them, and get to know faculty and graduate students better.

Prerequisites
All Decision Science majors must complete mathematics, statistics, and analytic methods prerequisites (see below), by the end of the sophomore year.

Mathematics Prerequisite
21-111-21-112 Calculus I-II or 21-120 Differential and Integral Calculus

Statistics Prerequisite
36-200 Reasoning with Data

Students must take one course from the following set (or an approved alternative). Students may not count a course used to fulfill the Mathematics Prerequisite as also filling the Analytic Methods Prerequisite.

Analytic Methods Prerequisite
21-122 Integration and Approximation
21-256 Multivariate Analysis
21-257 Models and Methods for Optimization
36-309 Experimental Design for Behavioral & Social Sciences
36-401 Modern Regression
36-410 Introduction to Probability Modeling
80-210 Logic and Proofs
80-211 Logic and Mathematical Inquiry
80-223 Causality and Probability
80-315 Modal Logic
88-252 Causal Inference in the Field

Curriculum
The core curriculum in Decision Science consists of two courses in empirical research methods and five courses providing the theoretical perspectives of Decision Science.

Theoretical Perspectives
73-102 Principles of Microeconomics
85-102 Introduction to Psychology
88-120 Reason, Passion and Cognition
88-223 Decision Analysis
88-302 Behavioral Decision Making

Research Methods
36-202 Methods for Statistics & Data Science
88-251 Empirical Research Methods

Electives
Complete at least 45 units of courses from the following categories. The selected courses may be from one category or from any combination. Note that not all elective courses are offered every year.

At least three of these courses (27 units) must be Department of Social and Decision Sciences courses (88-xxx).

1. Biological and Behavioral Aspects of Decision Making
85-350 Psychology of Prejudice
85-352 Evolutionary Psychology
85-375 Crosscultural Psychology
85-377 Attitudes and Persuasion
85-444 Relationships
85-446 Psychology of Gender
88-230 Human Intelligence and Human Stupidity
88-342 The Neuroscience of Decision Making
88-355 Social Brains: Neural Bases of Social Perception and Cognition
88-360 Behavioral Economics
88-365 Behavioral Economics and Public Policy
88-380 Dynamic Decisions

2. Managerial and Organization Aspects of Decision Making
70-311 Organizational Behavior
70-381 Marketing I
70-460 Mathematical Models for Consulting
88-150 Managing Decisions
88-221 Analytical Foundations of Public Policy
88-406 Behavioral Economics @ Work
88-418 Domestic Negotiation
88-419 International Negotiation
88-444 Public Policy and Regulation
88-451 Policy Analysis Senior Project
88-452 Policy Analysis Senior Project

3. Philosophical and Ethical Perspectives on Decision Making
70-332 Business, Society and Ethics
80-208 Critical Thinking
80-221 Philosophy of Social Science
80-244 Environmental Ethics
80-245 Medical Ethics
80-246 Moral Psychology
80-249 AI, Society, and Humanity
80-271 Philosophy and Psychology
80-305 Decision Theory
80-321 Causation, Law, and Social Policy
80-324 Philosophy of Economics
88-275 Bubbles: Data Science for Human Minds
88-409 Behavioral Economics Perspectives on Ethical Issues

4. Economic and Statistical Methods for Decision Science
70-374 Data Mining & Business Analytics
70-455 Modern Data Management
70-460 Mathematical Models for Consulting
73-265 Economics and Data Science
73-347 Game Theory Applications for Economics and Business
80-405 Game Theory
88-255 Strategic Decision Making
88-300 Programming and Data Analysis for Social Scientists
88-360 Behavioral Economics
88-367 Behavioral Economics in the Wild

5. Decision Science and Public Policy
84-364 Comparative Presidential Behavior: Leadership, Personality, and Decision Making
84-369 Decision Science for International Relations
88-221 Analytical Foundations of Public Policy
Department of Social and Decision Sciences

88-365 Behavioral Economics and Public Policy 9
88-366 Behavioral Economics of Poverty and Development 9
88-405 Risk Perception and Communication 9
88-444 Public Policy and Regulation 9
88-451 Policy Analysis Senior Project 12
or 88-452 Policy Analysis Senior Project

6. Research Methods for Decision Science

<table>
<thead>
<tr>
<th>Courses</th>
<th>Units</th>
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<tbody>
<tr>
<td>36-303</td>
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<tr>
<td>70-460</td>
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<td>85-310</td>
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<td>88-252</td>
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<td>88-402</td>
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<td>88-435</td>
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</tbody>
</table>

Note: Some courses have additional prerequisites.

Decision Science, B.S. Sample Curriculum

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
</tr>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>21-120 Differential and Integral Calculus (or 21-111, depending on placement) Pick One (Freshman Seminar, 76-101, 79-104) Decision Science Elective Decision Science Elective</td>
<td></td>
</tr>
<tr>
<td>73-102 Principles of Microeconomics Pick One (Freshman Seminar, 76-101, 79-104) Decision Science Elective Gen Ed or Elective Gen Ed or Elective</td>
<td></td>
</tr>
</tbody>
</table>

* 88-120 should be taken as the first course in the Decision Science sequence. It is intended for students in their first or second year; it is offered in Fall and Spring semesters. It may be taken as late as the junior year.

This is presented as a recommended plan for completing major requirements. The major can be completed in as few as two years (not that it must be), but students may not have time for other opportunities such as additional majors or study abroad. Students may declare their major as early as the third week of the spring semester in the freshman year.

Students who are planning to attend the Washington Semester Program, to study abroad, to apply for the Heinz Accelerated Masters Program, or to pursue an additional major/minor may have a very different curriculum map and should consult early – and often – with the Decision Science Academic Advisor.

Students are encouraged to consider the Washington Semester Program as part of their education. Suitable courses will be considered as fulfilling requirements of electives in the major. Please send the course syllabus, along with a note explaining how the course addresses fundamental aspects of decision science in one of the six elective categories.

Additional Major in Decision Science

Students who elect Decision Science as an additional major must fulfill all of the requirements of the Decision Science major.

Students pursuing Behavioral Economics, Policy, and Organizations with an additional major in Decision Science may only count 36-202, 73-102, 88-120, 88-251 and 88-302 toward the completion of both majors.

Students pursuing Policy and Management with an additional major in Decision Science and may only count 36-202, 73-102, 88-223, and 88-251 toward the completion of both majors.

Additional majors cannot count menu electives toward simultaneously fulfilling more than one major or minor. Students who are interested in an additional major in Decision Science should see the Academic Advisor of the Decision Science program.

The Major in Policy and Management

Christina Fong, Faculty Director
Location: Porter Hall 223I
P-and-M-advisor@andrew.cmu.edu
Connie Angermeier, Senior Academic Advisor
Location: Porter Hall 208A
cia2@andrew.cmu.edu

The Policy and Management major prepares students for key decision-making and management roles in government, non-profit organizations, and business. The major emphasizes fundamental aspects of decision making, practical management skills, and empirical techniques necessary for graduates to excel in the public and private sectors. The multidisciplinary curriculum merges frontier knowledge on the ideals of decision making, policy, and data analysis, as well as the realities of individual behavior within various institutional settings that must be confronted if high-quality outcomes are to be attained.

The major is comprised of three required core areas taken by all Policy and Management majors, a capstone course, plus one of four concentration areas to be chosen by the student.

The three core areas are as follows:

- The Policy Core gives students applied economic training and policy analysis experience. Students will gain an analytical understanding of some of the biggest domestic and global economic policy challenges, and gain an appreciation of the economic analysis of complex decisions, as well as the trade-off between economic and political-based decision making.

- The Management Core focuses on real-world applications of decision making. Students will develop an understanding of effective negotiation strategies and tactics, and identify the barriers and the psychological factors that may prevent decision-makers from reaching wise agreements. The courses provide systematic methods for dealing with the complexities that make decisions difficult, ranging from incorporating issues of risk and uncertainty in decision making to dealing with choices that have mutually conflicting objectives. For example, a business or government agency may need to decide on a policy for mitigating the uncertain impacts of air pollution while simultaneously trying to minimize the costs of such a policy on manufacturing. A firm might want to consider the uncertain reductions in security dangers from alternative policies to protect against terrorism.

- The Empirical Core focuses on key methods for collecting and analyzing data that are needed to make informed decisions. Students learn to use interviews, surveys, experiments, and econometric methods to enhance their ability to test existing, and design new, policies. Students will create statistical models to address questions asked in conceptual, computational, and data-driven investigations.

The required Capstone course gives students hands-on experience in a policy-related area. Students work in teams to apply the research and analytical methods learned in their other courses to a real-world problem.

Finally, the four concentration areas consist of four courses chosen by the student, in coordination with the Academic Advisor. The concentrations emphasize different aspects of decision making within the major:

- (1) Analytics, (2) Policy, (3) Management, and (4) Law. Each of the concentration areas draws upon the research and teaching strength of the Department of Social and Decision Sciences. Additionally, select courses from other areas in the University have been identified and approved as fulfilling elective requirements within the concentrations. More detail will be found in the concentration areas below.

The Policy and Management major provides an excellent combination of theoretical and practical skills for students who intend to seek managerial positions. Because of its strong analytic orientation, it is also an excellent major for those who intend to go on to professional schools in law, business, or public policy. It is also an appropriate choice for students pursuing graduate degrees in economics, political science, or decision science. One such graduate option is the accelerated master’s program offered by the H. J. Heinz III School of Public Policy and Management, in which a student earns both a B.S. in Policy and Management and a M.S. in Public Policy and Management in five years.

Prerequisites

All Policy and Management majors must complete mathematics and statistics prerequisites (see below), by the end of the sophomore year.
Mathematics Prerequisite
21-111-21-112 Calculus I-II
or 21-120 Differential and Integral Calculus

Statistics Prerequisite
36-200 Reasoning with Data

Curriculum
Policy Core
73-102 Principles of Microeconomics 9
88-221 Analytical Foundations of Public Policy 9

Management Core
88-150 Managing Decisions 9
88-223 Decision Analysis 12
88-418 Domestic Negotiation 9
or 88-419 International Negotiation

Empirical Core
36-202 Methods for Statistics & Data Science 9
88-251 Empirical Research Methods 9
88-252 Causal Inference in the Field 9
or 88-275 Bubbles: Data Science for Human Minds

Capstone
88-451 Policy Analysis Senior Project 12
or 88-452 Policy Analysis Senior Project

Concentration
Complete at least 36 units (a minimum of four courses) from the following concentrations of courses. Students are required to declare a concentration before their graduating semester, but are not required to choose a concentration when they initially declare (typically in the freshman or sophomore year). In fact, students are encouraged to take many of the core classes before making their concentration selection so that they can make a well-informed decision.

1. Analytics Concentration (minimum four total courses)
   Programming (one course) 9
   88-300 Programming and Data Analysis for Social Scientists 9

   Analytics/Empirical electives (select any two courses) 18
   88-252 Causal Inference in the Field (if not taken in Empirical Core) 9
   or 88-275 Bubbles: Data Science for Human Minds (if not taken in Empirical Core) 9
   88-402 Modeling Complex Social Systems 9
   21-257 Models and Methods for Optimization 9
   36-303 Sampling, Survey and Society 9
   36-315 Statistical Graphics and Visualization 9
   70-374 Data Mining & Business Analytics 9
   70-455 Modern Data Management 9
   70-460 Mathematical Models for Consulting 9
   80-321 Causation, Law, and Social Policy 9
   90-834 Health Care Geographical Information Systems * 12

   Analytics concentration breadth elective (select one course from any of the other three concentrations; must be 88xxx)

   * other Heinz courses are also approved. Please talk with the P&M advisor for information about getting approval for Heinz course registration.

2. Policy Concentration (minimum four total courses)
   Students select four courses; two of the four must be 88xxx
   88-365 Behavioral Economics and Public Policy 9
   88-366 Behavioral Economics of Poverty and Development 9
   88-367 Behavioral Economics in the Wild 9
   88-411 Rise of the Asian Economies 9

   Policy Concentration (minimum four total courses)
   88-365 Behavioral Economics and Public Policy 9
   88-411 Rise of the Asian Economies 9
   88-418 Domestic Negotiation 9
   88-419 International Negotiation

   * other Heinz courses are also approved. Please talk with the P&M advisor for information about getting approval for Heinz course registration.

3. Management Concentration (minimum four total courses)
   Students select four courses; two of the four must be 88xxx
   88-341 Team Dynamics and Leadership 9
   88-406 Behavioral Economics @ Work 9
   88-411 Rise of the Asian Economies 9
   88-418 Domestic Negotiation (if not taken in Management Core) 9
   88-419 International Negotiation (if not taken in Management Core) 9
   70-311 Organizational Behavior 9
   70-332 Business, Society and Ethics 9
   70-342 Managing Across Cultures 9
   70-371 Operations Management 9
   70-381 Marketing I 9
   70-430 International Management 9
   80-344 Management, Environment, and Ethics 9

4. Law Concentration (minimum four total courses)
   Students select four courses; one of the four must be 88xxx
   88-281 Topics in Law: 1st Amendment 9
   88-284 Topics of Law: The Bill of Rights 9
   70-364 Business Law 9
   70-365 International Trade and International Law 9
   73-408 Law and Economics 9
   80-321 Causation, Law, and Social Policy 9
   80-447 Global Justice 9
   84-313 International Organizations and Law 9
   84-373 Emerging Technologies and the Law 9

    NOTE: Some courses have additional prerequisites.

Policy and Management, B.S. Sample Curriculum

<table>
<thead>
<tr>
<th>Freshman</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
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<tr>
<td>36-200 Reasoning with Data</td>
<td>73-102 Principles of Microeconomics</td>
</tr>
<tr>
<td>21-120 Differential and Integral Calculus (or 21-111, depending on placement)</td>
<td>Pick Two (Freshman Seminar, 76-101, 79-104)</td>
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<td>Pick One (Freshman Seminar, 76-101, 79-104)</td>
<td>Gen Ed or Elective</td>
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<td>Gen Ed or Elective</td>
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</table>
The Minor in Decision Science

Gretchen Chapman, Faculty Director
Location: Porter Hall 219F
ds-advisor@andrew.cmu.edu

Connie Angermeier and Lizzy Stoyle, Academic Advisors
Location: Porter Hall 208A and 208G
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The minor in Decision Science provides students with a selective survey of disciplinary perspectives. The courses present descriptive and normative approaches to judgment and decision making, as well as some application of theories and results to real-world problems. Students who elect Decision Science as a minor must complete the four core courses (below) and two electives from the elective set (below).

Students may double-count one course with another major/minor.

Curriculum 54 units

Core Courses 36 units
73-102 Principles of Microeconomics 9
88-120 Reason, Passion and Cognition 9
88-223 Decision Analysis 12
88-302 Behavioral Decision Making 9

Elective Courses 18 units
Complete two courses from the following categories. At least one of the courses (9 units) must be a Social and Decision Sciences course (88-xxx).

1. Biological and Behavioral Aspects of Decision Making
Units
85-350 Psychology of Prejudice 9
85-352 Evolutionary Psychology 9
85-375 Crosscultural Psychology 9
85-377 Attitudes and Persuasion 9
85-442 Health Psychology 9
85-444 Relationships 9
85-446 Psychology of Gender 9
88-230 Human Intelligence and Human Stupidity 9
88-342 The Neuroscience of Decision Making 9
88-360 Behavioral Economics 9
88-365 Behavioral Economics and Public Policy 9
88-380 Dynamic Decisions 9

2. Managerial and Organizational Aspects of Decision Making
Units
70-311 Organizational Behavior 9
70-381 Marketing I 9
70-460 Mathematical Models for Consulting 9
88-150 Managing Decisions 9
88-221 Analytical Foundations of Public Policy 9
88-406 Behavioral Economics @ Work 9
88-418 Domestic Negotiation 9
88-419 International Negotiation 9
88-444 Public Policy and Regulation 9
88-451 Policy Analysis Senior Project 12
or 88-452 Policy Analysis Senior Project 9

Additional Major

Students who elect Policy and Management as an additional major must fulfill all of the requirements of the Policy and Management major. For additional majors in Policy and Management, courses taken as concentration electives may not count toward the student's primary major or other program.

Students pursuing Behavioral Economics, Policy, and Organizations with an additional major in Policy and Management may only count 36-202, 73-102, and 88-251 (and 88-252, if taken in Empirical Core) toward the completion of both majors.

Students pursuing Decision Science with an additional major in Policy and Management may only count 36-202, 73-102, 88-223, and 88-251 toward the completion of both majors.

Additional majors cannot count menu electives toward simultaneously fulfilling more than one major or minor. Students who are interested in an additional major in Policy and Management should see the Academic Advisor of the Policy and Management program.
At most, one course may be double-counted with another major or minor.

Whether these are in their area of expertise or in more general settings, managerial challenges and responsibilities in their professional lives.

Note: Some courses have additional prerequisites.

The Minor in Policy and Management
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Connie Angermeier, Senior Academic Advisor
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Regardless of major, many Carnegie Mellon graduates will face analytical and managerial challenges and responsibilities in their professional lives.

At most, one course may be double-counted with another major or minor.
Department of Social and Decision Sciences

Faculty

LINDA BABCOCK, James Mellon Walton Professor of Economics and Department Head – Ph.D., University of Wisconsin-Madison; Carnegie Mellon, 1988–

SAURABH BHARGAVA, Associate Professor of Economics – Ph.D., University of California, Berkeley; Carnegie Mellon, 2012–

STEPHEN BROOME, Associate Professor of Quantitative Psychology – Ph.D., University of Illinois at Urbana-Champaign; Carnegie Mellon, 2011–

GRETCHEN CHAPMAN, Professor of Psychology – Ph.D., University of Pennsylvania; Carnegie Mellon, 2017–

SIMON DEDEO, Assistant Professor of Social and Decision Sciences – Ph.D., Princeton University; Carnegie Mellon, 2017–

JULIE DOWNS, Associate Professor of Psychology – Ph.D., Princeton University; Carnegie Mellon, 1995–

PAUL S. FISCHBECK, Professor of Social and Decision Sciences and Engineering and Public Policy – Ph.D., Stanford University; Carnegie Mellon, 1990–

CHRISTINA FONG, Senior Research Scientist – Ph.D., University of Massachusetts, Amherst; Carnegie Mellon, 2001–

RUSSELL GOLMAN, Associate Professor of Behavioral Economics and Decision Science – Ph.D., The University of Michigan; Carnegie Mellon, 2010–

CLEOTILDE GONZALEZ, Research Professor of Information and Decision Sciences – Ph.D., Texas Tech University; Carnegie Mellon, 2000–

KAREEM HAGGAG, Assistant Professor of Economics – Ph.D., University of Chicago; Carnegie Mellon, 2017–

ALEX IMAS, Associate Professor of Economics – Ph.D., University of California, San Diego; Carnegie Mellon, 2014–

MARK S. KAMLET, University Professor of Economics and Public Policy and Provost Emeritus – Ph.D., University of California, Berkeley; Carnegie Mellon, 1978–

GEORGE F. LOEWENSTEIN, Herbert A. Simon Professor of Economics and Psychology – Ph.D., Yale University; Carnegie Mellon, 1990–

JOHN H. MILLER, Professor of Economics and Social Science – Ph.D., The University of Michigan; Carnegie Mellon, 1989–

DANIEL OPPENHEIMER, Professor of Psychology – Ph.D., Stanford University; Carnegie Mellon, 2017–

SILVIA SACCARDO, Assistant Professor of Economics – Ph.D., University of California, San Diego; Carnegie Mellon, 2016–

Emeriti Faculty

DAVID A. HOUNSHELL, David M. Roderick Professor of Technology and Social Change – Ph.D., University of Delaware; Carnegie Mellon, 1991–

WILLIAM R. KEECH, Professor of Political Economy – Ph.D., University of Wisconsin-Madison; Carnegie Mellon, 1997–

Adjunct Faculty

MARY JO MILLER – J.D., Duquesne University; Carnegie Mellon, 1999–

Research and Teaching Faculty

LINDA MOYA, Assistant Teaching Professor in Psychology – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2016–

MARK PATTERSON, Assistant Teaching Professor – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2019–

Affiliated Faculty

LINDA ARGOTE, David and Barbara Kirr Professor of Organizational Behavior – Ph.D., University of Michigan; Carnegie Mellon, 1979–

LEE BRANSTETTER, Professor of Economics – Ph.D., Harvard University; Carnegie Mellon, 2006–

KATHLEEN M. CARLEY, Professor of Sociology – Ph.D., Harvard University; Carnegie Mellon, 1984–

ROSALIND CHOW, Associate Professor of Organizational Behavior and Theory – Ph.D., Stanford University; Carnegie Mellon, 2008–

TAYA COHEN, Associate Professor of Organizational Behavior and Theory and Carnegie Bosch Junior Faculty Chair – Ph.D., University of North Carolina at Chapel Hill; Carnegie Mellon, 2008–

DENNIS N. EPPEL, Professor of Economics – Ph.D., Princeton University; Carnegie Mellon, 1974–

JEFFREY GALAK, Associate Professor of Marketing – Ph.D., New York University; Carnegie Mellon, 2009–

JOSEPH B. KADANE, Leonard J. Savage Professor of Statistics and Social Science – Ph.D., Stanford University; Carnegie Mellon, 1969–

SARAH B. KIESLER, Professor – Ph.D., The Ohio State University; Carnegie Mellon, 1979–

DAVID M. KRACKHARDT, Professor of Organizations and Public Policy – Ph.D., University of California, Irvine; Carnegie Mellon, 1991–

ROBERT E. KRAUT, Hebert A. Simon Professor of Human Computer Interaction – Ph.D., Yale University; Carnegie Mellon, 1993–

CHRIS OLIVOLA, Assistant Professor of Marketing – Ph.D., Princeton University; Carnegie Mellon, 2013–

JOEL TARR, Richard S. Caliguire University Professor of History and Policy – Ph.D., Northwestern University; Carnegie Mellon, 1967–