Department of Social and Decision Sciences

Department Office: Porter Hall 208
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.

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

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The interdisciplinary field of Behavioral Economics integrates perspectives from Economics and Psychology to understand and predict human behavior in economic contexts. There has been an explosion of interest from government agencies to incorporate the insights from behavioral economics into the design of public policy and in an executive order, President Obama urged government agencies to recruit behavioral economists. All types of organizations are increasingly relying on behavioral economics to improve their organizational effectiveness and profitability.

The Department of Social and Decision Sciences' (SDS) exceptional faculty in Behavioral Economics is at the forefront of research and teaching in this field and regularly consult with government and business on topics such as the impact of predatory lending practices on public welfare, how to design institutional practices to reduce the biases of stock traders, the design of interventions to motivate employees, how the government can increase participation in social service programs, interventions to increase patients' compliance with medication, and how businesses can reduce inequality in the workplace. Faculty bring this expertise and experience into the classroom to train students how to solve problems important to government and organizations.

Students in BEPO—the first and only major of its kind—will be uniquely trained in the integration of Economics and Psychology and will have a solid grounding in quantitative methods. The core includes courses in economics, psychology, behavioral economics, and quantitative methods. SDS offers the largest selection of behavioral economics courses anywhere in the world. Applied projects in courses will teach students how to collect original data, design field and laboratory experiments, analyze data, and develop interventions to improve economic outcomes and decisions. Students will be well equipped to enter a wide range of professions and graduate degree programs.

Prerequisites

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

Mathematics Prerequisite Units

Mathematics Prerequisite		Units
21-111-21-112	Differential Calculus - Integral Calculus	10-20
or 21-120	Differential and Integral Calculus	

Students who successfully pass the proctored Calculus Assessment on campus or who receive credit through accepted standardized exams (such as AP, IB, or Cambridge) at the 21-120 or 21-122 levels will be required to take a more advanced 21-xxx course for this prerequisite. 21-122, 21-240, or 21-256 are suggested.

Statistics Prerequisite Units

Statistics Prerequisite		Units
36-200	Reasoning with Data	9
or 36-201	Statistical Reasoning and Practice	

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		Units
36-202	Methods for Statistics and Data Science	9
88-251	Empirical Research Methods	9
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More	9
		27

Economics Courses		Units
73-102	Principles of Microeconomics	9
73-160	Foundations of Microeconomics: Applications and Theory	9
or 73-230	Intermediate Microeconomics	
		18

Psychology Courses		Units
88-120	Reason, Passion and Cognition *	9
88-302	Behavioral Decision Making	9
		18

* 88-120 Should be taken in the freshman or sophomore year.

Behavioral Economics Courses		Units
88-360	Behavioral Economics	9
88-367	Behavioral Economics in the Wild	9
		18

Senior Project Course		Units
88-453	Behavioral Economics, Policy, and Organizations Capstone	9
		9

ELECTIVES **36 units**

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**		Units
73-328	Health Economics	12
73-348	Behavioral Economics	9
73-408	Law and Economics	9
73-476	American Economic History	9

** 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.

Behavioral Economics		Units
73-348	Behavioral Economics	9
88-255	Behavioral and Applied Game Theory	9
88-365	Behavioral Economics and Public Policy	9
88-366	Behavioral Economics of Poverty and Development	9
88-406	Behavioral Economics in Organizations	9
88-409	Behavioral Economics Perspectives on Ethical Issues	9

Psychology		Units
70-311	Organizational Behavior	9
70-385	Consumer Behavior	9
85-352	Evolutionary Psychology	9
85-358	Pro-Social Behavior	9
85-375	Crosscultural Psychology	9
85-377	Attitudes and Persuasion	9
85-442	Health Psychology	9
88-230	Human Intelligence and Human Stupidity	9
88-342	The Neuroscience of Decision Making	9
88-355	Social Brains: Neural Bases of Social Perception and Cognition	9
88-380	Dynamic Decisions	9
88-388	Psychological Models of Decision Making	9
88-435	Decision Science and Policy	9

Note: Some courses have additional prerequisites.

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

Freshman		Sophomore	
Fall	**Spring**	**Fall**	**Spring**
21-120 Differential and Integral Calculus (Or 21-111, depending on placement)	36-202 Methods for Statistics and Data Science	88-251 Empirical Research Methods	88-252 Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More
Pick One (Freshman Seminar, 76-101, 79-104)	73-160 Foundations of Microeconomics: Applications and Theory***	88-360 Behavioral Economics	88-302 Behavioral Decision Making
36-200 Reasoning with Data Or 36-201	Pick Two (Freshman Seminar, 76-101, 79-104)	Gen Ed or Elective	88-367 Behavioral Economics in the Wild
88-120 Reason, Passion and Cognition *	Gen Ed or Elective	Gen Ed or Elective	Elective or BEPO Elective
73-102 Principles of Microeconomics		Gen Ed or Elective	Gen Ed or Elective

Junior		Senior	
Fall	**Spring**	**Fall**	**Spring**
BEPO Elective	BEPO Elective	Senior Honors Thesis**** or Elective	88-453 Behavioral Economics, Policy, and Organizations Capstone
BEPO Elective	BEPO Elective	Four Electives or Additional Decision Science Electives	Four Electives or Additional Decision Science Electives
Gen Ed	Gen Ed		
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 Fall term for 88-453 Behavioral Economics, Policy, and Organizations Capstone, which is only offered in the Spring 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

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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		Units
21-111-21-112	Differential Calculus - Integral Calculus	10-20
or 21-120	Differential and Integral Calculus	

Students who successfully pass the proctored Calculus Assessment on campus or who receive credit through accepted standardized exams (such as AP, IB, or Cambridge) at the 21-120 or 21-122 levels will be required to take a more advanced 21-xxx course for this prerequisite. 21-122, 21-240, or 21-256 are suggested.

Statistics Prerequisite		Units
36-200	Reasoning with Data	9
or 36-201	Statistical Reasoning and Practice	

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		Units
21-122	Integration and Approximation	10
21-256	Multivariate Analysis	9
21-257	Models and Methods for Optimization	9
36-309	Experimental Design for Behavioral and Social Sciences	9
36-401	Modern Regression	9
36-410	Introduction to Probability Modeling	9
80-211	Logic and Mathematical Inquiry	9
80-212	Arguments and Logical Analysis	9
80-223	Causality and Probability	9
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More	9

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		Units
73-102	Principles of Microeconomics	9
85-211	Cognitive Psychology	9
88-120	Reason, Passion and Cognition *	9
88-223	Decision Analysis	9
88-302	Behavioral Decision Making	9
		45

* 88-120 should be taken in the freshman or sophomore year.

Research Methods		Units
36-202	Methods for Statistics and Data Science	9
88-251	Empirical Research Methods	9
		18

Electives 45 units

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		Units
85-352	Evolutionary Psychology	9
85-377	Attitudes and Persuasion	9
85-442	Health Psychology	9
88-230	Human Intelligence and Human Stupidity	9
88-342	The Neuroscience of Decision Making	9
88-355	Social Brains: Neural Bases of Social Perception and Cognition	9
88-360	Behavioral Economics	9
88-365	Behavioral Economics and Public Policy	9
88-380	Dynamic Decisions	9

2. Managerial and Organization Aspects of Decision Making		
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 in Organizations	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	

3. Philosophical and Ethical Perspectives on Decision Making		Units
80-208	Critical Thinking	9
80-221	Philosophy of Social Science	9
80-244	Environmental Ethics	9
80-245	Medical Ethics	9
80-305	Choices, Decisions, and Games	9
80-321	Causation, Law, and Social Policy	9
88-275	Bubbles: Big Data for Human Minds	9
88-409	Behavioral Economics Perspectives on Ethical Issues	9

4. Economic and Statistical Methods for Decision Science		Units
70-374	Data Mining & Business Analytics	9
70-455	Modern Data Management	9
70-460	Mathematical Models for Consulting	9
73-347	Game Theory for Economists	9
80-337	Philosophy, Politics & Economics	9
80-405	Game Theory *	9
88-255	Behavioral and Applied Game Theory	9
88-360	Behavioral Economics	9
88-367	Behavioral Economics in the Wild	9

* 80-405 and 88-316 are different courses and are not cross-listed.

5. Decision Science and Public Policy		
84-393	Legislative Decision Making: US Congress	9
88-221	Analytical Foundations of Public Policy	9
88-365	Behavioral Economics and Public Policy	9
88-366	Behavioral Economics of Poverty and Development	9
88-405	Risk Perception and Communication	9
88-412	Energy, Climate Change, and Economic Growth in the 21st Century	9
88-430	Methods of Policy Analysis	12
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		Units
36-303	Sampling, Survey and Society	9
70-460	Mathematical Models for Consulting	9
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More	9
88-319	Large-scale social phenomenon	9
88-402	Modeling Complex Social Systems	9
88-417	Scientific Integrity and Communication	9
88-435	Decision Science and Policy	9

Note: Some courses have additional prerequisites.

Decision Science, B.S. Sample Curriculum

Freshman		**Sophomore**	
Fall	**Spring**	**Fall**	**Spring**
88-120 Reason, Passion and Cognition*	36-202 Methods for Statistics and Data Science	88-251 Empirical Research Methods	85-211 Cognitive Psychology (or 88-302)
36-201 Statistical Reasoning and Practice	Pick Two (Freshman Seminar, 76-101, 79-104)	88-302 Behavioral Decision Making (or 85-211)	88-252 Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More (or other Analytic Methods course)
21-120 Differential and Integral Calculus (or 21-111, depending on placement)	Gen Ed or Elective	Gen Ed or Elective	Decision Science elective
73-102 Principles of Microeconomics	Gen Ed or Elective	Gen Ed or Elective	Elective or Decision Science elective
Pick One (Freshman Seminar, 76-101, 79-104)		Gen Ed or Elective	Gen Ed or Elective

Junior		Senior	
Fall	**Spring**	**Fall**	**Spring**
Decision Science elective	88-223 Decision Analysis	Senior Honors Thesis or Elective	Senior Honors Thesis or Elective
Decision Science elective	Decision Science elective	Four Electives or additional Decision Science electives	Four Electives or additional Decision Science electives
Gen Ed	Gen Ed		
Elective	Elective		
Elective	Elective		

* 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 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

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The Policy and Management major prepares students for key decision-making and management roles in government, non-profit organizations, and business. The major emphasizes analytic approaches to decision making and practical management skills necessary for graduates to excel in both the public and private sectors. The multidisciplinary curriculum merges frontier knowledge on both the ideals of decision making, policy, and organization, as well as the realities of individual and organizational behavior that must be confronted if high-quality outcomes are to be attained.

The major is comprised of four required core areas and students choose one of four concentration areas:

The Policy Core gives students applied economic training and policy analysis experience. Students will 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 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 school programs 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 masters 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, statistics, and analytic methods prerequisites (see below), by the end of the sophomore year.

Mathematics Prerequisite		Units
21-111-21-112	Differential Calculus - Integral Calculus	10-20
or 21-120	Differential and Integral Calculus	

Students who successfully pass the proctored Calculus Assessment on campus or who receive credit through accepted standardized exams (such as AP, IB, or Cambridge) at the 21-120 or 21-122 levels will be required to take a more advanced 21-xxx course for this prerequisite. 21-122, 21-240, or 21-256 are suggested.

Statistics Prerequisite		Units
36-200	Reasoning with Data	9
or 36-201	Statistical Reasoning and Practice	

Curriculum

Policy Core		Units
73-102	Principles of Microeconomics	9
88-221	Analytical Foundations of Public Policy	9
		18

Management Core		Units
88-150	Managing Decisions	9
88-223	Decision Analysis	9
88-418	Domestic Negotiation	9
or 88-419	International Negotiation	
		27

Empirical Core		Units
36-202	Methods for Statistics and Data Science	9
88-251	Empirical Research Methods	9
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More	9
or 88-275	Bubbles: Big Data for Human Minds	
		27

Capstone		Units
88-430	Methods of Policy Analysis	12
or 88-451	Policy Analysis Senior Project	
or 88-452	Policy Analysis Senior Project	
		12

Concentration 36 units

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 (four total courses)		Units
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: Using Data to Study Crime, Love, Sports & More (if not taken in Empirical Core)	9
88-275	Bubbles: Big Data for Human Minds (if not taken in Empirical Core)	9
88-402	Modeling Complex Social Systems	9
88-417	Scientific Integrity and Communication	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)		9

* 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 (four total courses)		Units
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
88-435	Decision Science and Policy	9
88-444	Public Policy and Regulation	9
36-303	Sampling, Survey and Society	9
19-402	Telecommunications Technology, Policy & Management	12
19-421	Emerging Energy Policies	9
19-443	Special Topics in EPP: Climate Change Science and Adaptation	9
19-639	Policies of the Internet	12
73-328	Health Economics	12
79-342	Introduction to Science and Technology Studies	9
79-374	American Environmental History: Critical Issues	9
80-244	Environmental Ethics	9
80-247	Ethics and Global Economics	9
80-324	Philosophy of Economics	9
80-341	Computers, Society and Ethics	9
84-362	Diplomacy and Statecraft	9
84-389	Terrorism and Insurgency	9
90-798	Environmental Policy & Planning *	12

* 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 (four total courses)		Units
Students select four courses; two of the four must be 88xxx)		
88-341	Organizational Communication	9
88-406	Behavioral Economics in Organizations	9
88-411	Rise of the Asian Economies	9
88-418	Domestic Negotiation (if not taken in Empirical Core)	9
88-419	International Negotiation (if not taken in Empirical Core)	9
70-311	Organizational Behavior	9
70-318	Managing Effective Work Teams	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 (four total courses)		Units
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
80-247	Ethics and Global Economics	9
80-447	Global Justice	9
84-393	Legislative Decision Making: US Congress	9
84-402	Judicial Politics and Behavior	9

NOTE: Some courses have additional prerequisites.

Policy and Management, B.S. Sample Curriculum

Freshman		**Sophomore**	
Fall	**Spring**	**Fall**	**Spring**
88-150 Managing Decisions	36-202 Methods for Statistics and Data Science	88-251 Empirical Research Methods	88-221 Analytical Foundations of Public Policy
36-200 Reasoning with Data or 36-201	73-102 Principles of Microeconomics	88-275 Bubbles: Big Data for Human Minds or 88-252 in spring	88-223 Decision Analysis
21-120 Differential and Integral Calculus (or 21-111, depending on placement)	Pick Two (Freshman Seminar, 76-101, 79-104)	88-418 Domestic Negotiation or 88-419	88-252 Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More or 88-275 in fall
Pick One (Freshman Seminar, 76-101, 79-104)	Gen Ed or Elective	Gen Ed or Elective	Gen Ed or Elective
Gen Ed or Elective		Gen Ed or Elective	Gen Ed or Elective

Junior		Senior	
Fall	**Spring**	**Fall**	**Spring**
Policy & Management concentration elective	Policy & Management concentration elective	Capstone (either 88-452 in fall, or 88-430 or 88-451 in spring)	Capstone (either 88-430 or 88-451 in spring, or 88-452 in fall)
Policy & Management concentration elective	Policy & Management concentration elective	Senior Honors Thesis or Elective	Senior Honors Thesis or Elective
Gen Ed	Elective	Complete remaining gen eds/electives	Complete remaining gen eds/electives
Elective	Elective	additional Policy & Management concentration electives	additional Policy & Management concentration electives
Elective	Elective		
Students may consider the CMU Washington Semester Program or study abroad in this semester	Students may consider the CMU Washington Semester Program or study abroad in this semester		

This is presented as a recommended plan for completing major requirements. 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 Policy and Management Academic Advisor.

Students are encouraged to consider the Washington Semester Program as part of their education. Suitable courses may be considered as fulfilling requirements of concentration electives in the major. Please discuss course selections with the Academic Advisor during the application phase to the program.

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 88-251, 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.

The Minor in Decision Science

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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	9
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
85-352	Evolutionary Psychology	9
85-377	Attitudes and Persuasion	9
85-442	Health Psychology	9
88-230	Human Intelligence and Human Stupidity	9
88-342	The Neuroscience of Decision Making	9
88-355	Social Brains: Neural Bases of Social Perception and Cognition	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 in Organizations	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	

3. Philosophical and Ethical Perspectives on Decision Making		Units
80-208	Critical Thinking	9
80-221	Philosophy of Social Science	9
80-244	Environmental Ethics	9
80-245	Medical Ethics	9
80-305	Choices, Decisions, and Games	9
80-321	Causation, Law, and Social Policy	9
88-275	Bubbles: Big Data for Human Minds	9
88-409	Behavioral Economics Perspectives on Ethical Issues	9

4. Economic and Statistical Methods for Decision Science		Units
70-374	Data Mining & Business Analytics	9
70-455	Modern Data Management	9
70-460	Mathematical Models for Consulting	9
73-347	Game Theory for Economists	9
80-337	Philosophy, Politics & Economics	9
80-405	Game Theory *	9
88-255	Behavioral and Applied Game Theory	9
88-360	Behavioral Economics	9
88-367	Behavioral Economics in the Wild	9

* 80-405 and 88-316 are different courses and are not cross-listed.

5. Decision Science and Public Policy		Units
84-393	Legislative Decision Making: US Congress	9
88-221	Analytical Foundations of Public Policy	9
88-365	Behavioral Economics and Public Policy	9
88-366	Behavioral Economics of Poverty and Development	9
88-405	Risk Perception and Communication	9
88-412	Energy, Climate Change, and Economic Growth in the 21st Century	9
88-417	Scientific Integrity 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		Units
36-303	Sampling, Survey and Society	9
70-460	Mathematical Models for Consulting	9
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More	9
88-319	Large-scale social phenomenon	9
88-402	Modeling Complex Social Systems	9
88-435	Decision Science and Policy	9

Note: Some courses have additional prerequisites

The Minor in Policy and Management

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Regardless of major, many Carnegie Mellon graduates will face managerial challenges and responsibilities in their professional lives. Whether these are in their area of expertise or in more general settings, these roles will to some degree require assumption of the responsibility for directing the work of others. The Policy and Management minor is intended for students who expect to need these management concepts and skills. At most, one course may be double-counted with another major or minor.

Curriculum 54 units

Required Courses 36 units

73-102	Principles of Microeconomics	9
88-150	Managing Decisions	9
88-221	Analytical Foundations of Public Policy	9
88-223	Decision Analysis	9

18 unitsElectives

Complete two courses from any of the concentrations (Analytics, Policy, Management, and Law). Courses do not need to be taken from the same concentration. The courses are listed by their concentration categories as a way to guide students. At least one of the courses (9 units) must be a Social and Decision Sciences course (88-xxx).

Analytics Concentration		
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More (if not taken in Empirical Core)	9
88-275	Bubbles: Big Data for Human Minds (if not taken in Empirical Core)	9
88-300	Programming and Data Analysis for Social Scientists	9
88-402	Modeling Complex Social Systems	9
88-417	Scientific Integrity and Communication	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

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

Policy Concentration		Units
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
88-435	Decision Science and Policy	9
88-444	Public Policy and Regulation	9
36-303	Sampling, Survey and Society	9
19-402	Telecommunications Technology, Policy & Management	12
19-421	Emerging Energy Policies	9
19-443	Special Topics in EPP: Climate Change Science and Adaptation	9
19-639	Policies of the Internet	12
73-328	Health Economics	12
79-342	Introduction to Science and Technology Studies	9
79-374	American Environmental History: Critical Issues	9
80-244	Environmental Ethics	9
80-247	Ethics and Global Economics	9
80-324	Philosophy of Economics	9
80-341	Computers, Society and Ethics	9
84-362	Diplomacy and Statecraft	9
84-389	Terrorism and Insurgency	9
90-798	Environmental Policy & Planning *	12

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

Management Concentration		Units
88-341	Organizational Communication	9
88-406	Behavioral Economics in Organizations	9
88-411	Rise of the Asian Economies	9
88-418	Domestic Negotiation (if not taken in Empirical Core)	9
88-419	International Negotiation (if not taken in Empirical Core)	9
70-311	Organizational Behavior	9
70-318	Managing Effective Work Teams	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

Law Concentration		Units
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
80-247	Ethics and Global Economics	9
80-447	Global Justice	9
84-393	Legislative Decision Making: US Congress	9
84-402	Judicial Politics and Behavior	9

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