BEHAVIORAL & DECISION SCIENCES (BDS)

BDS 5000 Introduction to Behavioral & Decision Sciences
In the past 50 years, social scientists have increasingly used insights from psychology to explore the limitations of the standard, economic model of rational decision-making--a field now known broadly as behavioral science. This course is an introduction to the central concepts of behavioral science, touching on related research in economics, psychology, political science, and more. We also touch on various practical implications of this work for practitioners, from businesspeople to policymakers to everyday people in their day-to-day lives. The topics covered include self-control, procrastination, fairness, cooperation, reference dependence, and choice under uncertainty. The course consists of live and asynchronous core lectures that introduce the central concepts in behavioral science to students, supplemented by a series of exciting guest lectures that bring some of the leading academic voices working in the behavioral sciences to the classroom to share their work and insights.
Summer Term
0.5-1 Course Unit

BDS 5010 Behavioral Science: Theory and Application of Experimental Methods
Our understanding of different mechanisms and (economic) relationships is hampered by a lack of data and - more often than not - either the observation or the data is not reliable. In recent decades, through the work of pioneers in the behavioral and experimental economics fields, such as Daniel Kahneman and Vernon Smith, economics experiments have become a vital part of the scientific discourse, facilitating our understanding of the world we live in (much like in biology, chemistry, physics, etc.). In this course, we will explore economic behavior by developing a research idea, designing an experiment, then carrying out the experiment under controlled conditions. Essentially, you will learn how to think about ideas, generate ideas, and use economic experiments to test them. Permits offered to non-MBDS students if space is available.
1 Course Unit

BDS 5020 Norms and Nudges
Social norms are the rules we live by, and we encounter them in any area of our life. Social norms often guarantee the smooth functioning of a group or organization. Sometimes, however, these norms are inefficient or do not benefit society at large. What can we do to change these harmful collective behaviors? Social psychology, philosophy, sociology, rational-choice, legal theory, and even economics, are investigating and theorizing pro-social behavior, justice motivation, and moral and social norms.
In this course, we will examine the latest and best in this emerging multidisciplinary field. Students will be encouraged to apply its findings and methods to their area of interest.
Mutually Exclusive: PHIL 4470
1 Course Unit

BDS 5030 Behavioral Public Policy
A core MBDS program course requirement, this course addresses methodological issues that apply to each of the policies currently provided by governmental and non-governmental institutions worldwide. We will discuss the conditions that must be satisfied to make policies effective and the behavioral incentives that policy actors face. The course relies on the main theoretical and empirical findings of modern policy analysis and upon an extensive set of case studies. Students are required to master the conceptual material and to confront and solve practical cases in public policy. Permits offered to non-MBDS students if space is available.
1 Course Unit

BDS 5050 Research Methods for Behavioral Science
The course is a survey of methods of research in behavioral and decision sciences. We will cover principles of scientific thinking, operationalizing research questions into testable ideas, and the ethics of behavioral research. A significant portion of the class will be devoted to study designs. We will cover basics of experimental design, quasi-experiments, and observational surveys. The class will also provide an introduction to qualitative research methods, including focus groups, unstructured and semi-structured interviews, and ethnographies. We will conclude the semester with the methods of communicating our findings to different types of audiences. We will analyze research processes and results from the perspective of the information consumer. The class will be useful for those interested in learning how to read and write behavioral science publications and how to design one's own studies. For practical skills in using software to analyze data, see BDS 5220 and BDS 5160.
Fall
1 Course Unit

BDS 5060 Applied Statistics for Behavioral & Decision Sciences
This course is a basic primer for key concepts in statistics needed for anyone that wants to take additional classes in behavioral and decision sciences- or work in a relevant field. This course helps serve as a prerequisite for the MBDS Program.
Summer Term
0.5 Course Units

BDS 5090 Applied Game Theory
This course covers basic concepts in game theory and applies these concepts to the social sciences. By the end of the course students will know how to identify Nash equilibria and Pareto optima, understand how to diagram simultaneous and sequential games, and be able to explain how different strategies apply to single play games and repeated games. Topics will include why conflict and cooperation occur among organisms with diverse goals and scarce resources, and how pro-social emotions and norms can alter human behavior in ways that facilitate cooperation. This course helps serve as a prerequisite for the MBDS Program.
Summer Term
0.5 Course Units

BDS 5110 Negotiation Behavior
We negotiate every day-with merchants, service providers, employers, coworkers, friends, and family-determining the price we will pay, the amount of our compensation, where to go to dinner, who will clean the kitchen, etc. Although negotiations are a ubiquitous part of our everyday lives, many of us know little about the strategy and psychology of effective negotiations. Why do we sometimes get our way, while other times we walk away feeling frustrated by our inability to achieve the agreement we desire? Over the past few decades, research in social psychology and decision science has sought the answer to this question and created a rich body of knowledge on bargaining behavior, leading to a well-validated prescription on how to negotiate. In this course, you will learn both the how and the why of negotiation behavior. Through role-playing exercises, you will be able to evaluate your own negotiation behavior as well as that of your classmates and receive advice on how to optimize it to achieve your desired outcomes. Importantly, you will also read and discuss research articles that have led to such practical advice. Non-MBDS students may request a permit to register through Path@Penn.
Two Term Class, Student may enter either term; credit given after both terms are complete
1 Course Unit

BDS 5120 Power, Persuasion and Influence
Power and influence are fundamental for taking action in personal relationships, professional contexts and in society in general. To be able to use them effectively, however, we need to understand the nature, sources, uses and development of power and influence in these various contexts. To accomplish this goal, this course will survey theories of power, persuasion and influence from multiple disciplines and discuss their application to everyday actions. Permits offered to non-MBDS students if space is available.
1 Course Unit

BDS 5150 Game Theory
This course provides a way to understand the behavior of individuals and organizations in situations where their actions have a strategic impact on each other. As players can be individuals, organizations, or even countries, this course covers a broad range of strategic settings. As an interdisciplinary tool, game theory is used in a wide range of fields, including economics, political science, psychology, and sociology. Game theory is applied to inform decisions in situations such as price wars between companies, international relations, or even evolutionary biology. In this course students will learn how strategic players map strategies with the payoffs associated with each possible outcome, and how to best respond to the decisions of other players. Strategies refer to the actions that players can take, and payoffs represent the rewards or consequences that players obtain based on their actions and the actions of others. Game theory models are useful not only to analyze the strategic interaction of players, but to predict the outcome of games. Even when most predictions assume that each player acts rationally, meaning that they choose the strategy that maximizes their payoff, we will explicitly consider deviations from this assumption in the course. The course covers both fundamental concepts and applications of game theory. Examples of applications studied in the course include cooperation (like in a social dilemma or a public good game), coordination (as in the weakest link or minimum effort game), and conflict (as in contests and tournaments). These strategic settings will be used to understand how human behavior aligns with the principles and predictions of game theory. The course will provide answers to questions like the following: Why do individuals cooperate with strangers they are never going to meet again? Why do organizations fail to effectively use incentives to coordinate individuals and teams? Why is the sophistication of counterparts so difficult to predict? Why are resources systematically destroyed in wars, and inter-group conflict easily reignites despite its huge cost? The course is composed of a series of self-content modules addressing these questions with examples and cases. Game theory and behavioral science concepts and tools will be explained from scratch: no pre-existing knowledge is required.
Fall
1 Course Unit

BDS 5160 Data Science and Quantitative Modeling
(This course fulfills the MBDS program's quantitative course requirement.) Increasingly, decision-makers and systems rely on intelligent technology to analyze data systematically to improve decision-making. Data science is opening new pathways to improve decision-making in private and public organizations. Through lectures and real-world examples, this course will present a practical understanding of the fundamental methods used by data scientists including data management techniques, quantitative modeling, and data visualization. The primary emphasis is on understanding the fundamental concepts and applications of data science in the context of behavioral and decision sciences. We will cover several algorithms though this is not an algorithms course. We will examine real-world examples and cases to place data science techniques in context, to develop data-analytic thinking, and to illustrate that proper application is as much an art as it is a science. Permits offered to non-MBDS students if space is available.
Spring
1 Course Unit

BDS 5210 Judgments & Decisions
This course addresses the ideal standards of judging and deciding, and the ways in which people fall short of these standards, with emphasis on the latter. We will discuss heuristics and other intuitive strategies that people may use in day-to-day thinking, and the biases that result from this use. We will apply this approach to shed light on faulty analyses in medicine, law, and everyday thinking. Understanding the ideals of good thinking and causes of our failure to conform to these ideals may ultimately help improve the decisions we make in private and professional lives. Permits offered to non-MBDS students if space is available.
1 Course Unit

BDS 5220 Statistical Reasoning for Behavioral Science
The complexity of human behavior exceeds that of most phenomena studied in the natural sciences. Any inference about human behavior and decision-making has to rely on statistical methods rather than on deterministic modeling. In this class, students will learn the methods of descriptive and inferential statistics used in behavioral science from the basics to those more commonly used. In this sense, this is a class on theoretical statistics, but we will go beyond theory to apply these methods to answer our own research questions. As such, this is also a class on applied statistics. We will rely heavily on statistical programming languages (namely, R) and version control systems (Git) to create statistical reports. Finally, we will work with new research in the field and learn to critically assess the statistical methods used therein. After completing this class, students will be competent in reading cutting-edge scientific literature, producing their own results using the more commonly usedmethods, and able to critically assess the limitations of their own and other people's research. Non-MBDS students must complete a permit request.
1 Course Unit

BDS 5250 Organizational Behavior
In order to successfully manage an organization, its groups, and its individuals, you need to first understand why people in a given organization do what they do. In other words, an understanding of the human side of management and an ability to communicate that understanding are essential to your success in any career you choose. This course assumes that in order to accomplish organizational goals; you will need to work for other people, work with other people, and supervise other people. To do so effectively, you need to understand the behavioral science behind organizations. This course will survey several topics in service of this goal, including decision biases, motivation, power and influence, networks, diversity, team processes and culture. Throughout, you will be asked to demonstrate your knowledge of these concepts and your ability to use them to analyze situations as well as to provide prescriptions for change. Permits offered to non-MBDS students if space is available.
1 Course Unit

BDS 5310 Behavioral Science in Action: Past, Present & Future
This course will combine pragmatic insight with discerning attention to the latest (robust) behavioral science findings. It will focus on providing participants with a good grounding in how behavioral science is applied in practice, and the issues that arise when doing so. For example: What are the common ethical dilemmas and implementation challenges that arise? What are the best ways to ensure behavioral science has an impact in large organizations? What are employers of behavioral scientists looking for? And how should behavioral science be applied differently in the future?
Fall
1 Course Unit

BDS 5400 Explanation and Non-Experimental Methods in Behavioral Science
Applied behavioral scientists must be able to explain what behavioral science is (or behavioral insights are) and how we can leverage them for a better world. What do we mean by “behavioral science and behavioral insights”? How do we use those insights? Whether working in public companies, global non-profits, research institutions, or other organizations, one must interpret, evaluate, and communicate interdisciplinary research with colleagues. Put another way, creating, assessing, and applying behavioral insights from research requires a strong understanding of and ability to communicate about disparate, sometimes competing, social theories, methods, and forms of explanation. This course will provide overviews of major trends in academic disciplines which study human behavior and link these research programs to contemporary B-sci practice. We will investigate the research methods each of these disciplines use which can inform us about human behavior. The two primary modalities of evidence-use in contemporary B-sci - experimental economics and experimental psychology - will be discussed in comparison with non-experimental methods, with a focus on non-experimental methods. Thus, a primary goal of this course is for students to be able to leverage the different kinds of insights gained from different methods in order to create coherent, well-reasoned, and understandable explanations for use in applied settings. Topics covered will include anthropological, sociological, economic, linguistic, and psychological perspectives; AI-use and authorship; and the meta-study of science, among others.
Summer Term
1 Course Unit

BDS 5450 International Organizations & Organizational Influence
This course is meant to build on the skills developed in the rest of the Master of Behavioral and Decision Sciences program, to diversify the scope of applied behavioral science in the context of the non-profit arena, and more broadly speaking, to apply behavioral insights for (pro)social change. This seminar emphasizes the potential use of behavioral science for social transformation and shared quality of life. Goals – Perspective – Practice – Partnerships – Positioning 1. Perspective: Students gain understanding of the scope and workstyle of international and non-profit organizations and are motivated to get involved in social change endeavors. 2. Practice: Students gain work experience in view of future employment opportunities in organizations with a social orientation. 3. Partnerships: Students are connected to potential clients from the nonprofit world. 4. Positioning: Recognition and reputation of UPenn MBDS Program with potential employers from international organizations are raised.
Fall
1 Course Unit

BDS 5550 Groups and Networks
Understanding social groups and networks is a crucial component to understanding the nuances of interdependent behavior. The first aim of the class is to critically examine the theoretical approaches used to conceptualize the formation and performance of social groups as well as their dynamics from a social network perspective. The next part of the course will cover applied aspects of social network data collection and analysis including concepts such as sampling, descriptive statistics, and inferential models. We will discuss the design and implementation of field studies to answer research questions about community formation, homophily, and the spread of behavior and beliefs. The last part of the course will introduce students to agent-based modeling; We will study diffusion, contagion, and the emergence of norms using microsimulations. The course will wrap up with an overview of the presented theories, methods, and approaches of social network analysis and students will have the opportunity to reflect and synthesize about these overarching concepts. Please note: the course will draw from current literature and applied research and while some parts of the course will be taught in R and NetLogo, coding is not the primary focus of the course. Proficiency in R or Netlogo is not required
1 Course Unit

BDS 5850 Consulting in Behavioral Science
In this course, students will gain a better understanding of applied behavioral science. The course will emphasize oral and written communications and the development of client deliverables, client relations, team work, client presentation, and peer review. Team meetings with clients will take place during weekdays. Permits offered to non-MBDS students if space is available.
1 Course Unit

BDS 5880 Special Topics in Behavioral & Decision Sciences
This course offers students an opportunity to learn, interact with, and discuss cutting edge topic areas in behavioral and decision sciences.
1 Course Unit

BDS 5991 Independent Study
The Independent Study is only open to MBDS students.
1 Course Unit

BDS 5997 Capstone: Consulting with Behavioral Science
The updated MBDS capstone is a two-semester program designed to help students engage with industry and gain a deeper understanding of the field of Behavioral Sciences. In BDS 5997, offered in the fall semester, students will have the opportunity to talk to industry leaders and gain firsthand knowledge on how behavioral science is applied in various organizational settings. They will also learn about the increasing relevance of BeSci insights and tools in organizations, as well as the job market prospects for MBDS graduates. Additionally, Skill BOOSTcamps will be organized to teach students crucial skills that will be useful for their applied capstone course in the Spring.
Fall
0.5 Course Units

BDS 5998 Capstone: Design Challenge
As the second portion of the MBDS capstone, this course will be offered during the spring semester to students who have taken BDS 5997 Capstone: Consulting in Behavioral Science. As part of this course, students will participate in professional development workshops and engage in a Design Challenge. Working in teams, they will use the instructional and strategic input they received in the fall term to tackle specific industry problems. The goal of the program is to prepare students to be industry-ready as soon as they complete the program.
Spring
0.5 Course Units

BDS 5999 Behavioral Science Individual Capstone
Behavioral Science Individual Capstone for cohorts before 2022.
1 Course Unit

BDS 9900 Master's Continuation
0 Course Units