INSTITUTE FOR DATA, SYSTEMS, AND SOCIETY

Graduate Study

IDSS provides educational programs anchored in the following intellectual pillars: statistics, information and decision sciences, and human and institutional behavior.

IDSS's academic programs embrace the collision and synthesis of ideas and methods from analytical disciplines, including statistics, stochastic modeling, information theory and inference, systems and control theory, optimization, economics, human and social behavior, and network science. Each of these fields in isolation is an insufficient basis for a deep understanding of complex interactions and systems. However, the intersections of these disciplines provide new tools and perspectives for understanding complex systems, addressing overarching challenges (including sustainability and systemic risk), and presenting design principles and architectures that enable those systems' quantification, management, and regulation.

Inquiries about IDSS academic programs may be directed to the Academic Office (*idss_academic_office@mit.edu*).

Admission Requirements for Graduate Study

Application forms for all programs (*http://web.mit.edu/admissions/graduate*) are available online. Applicants whose first language is not English must offer evidence of written and oral proficiency in English by registering for the International English Language Testing System (IELTS) exam (*http://www.ielts.org*), academic format, and achieving a score of 7.5 or better. Information about the Graduate Record Examinations (GRE) (*https://idss.mit.edu/academics*) can be obtained through the IDSS website. Applicants should refer to the details of each program concerning specific requirements for admission.

Master of Science in Technology and Policy

The Technology and Policy Program (TPP) (*http://tpp.mit.edu*) educates students seeking leadership roles in the constructive development and use of technology—an area that is not well served by the traditional education of technical or social science specialists. TPP focuses on meeting the need for leaders who are engineers and scientists—people with not only strong technical foundations but also the skills and abilities to deal cogently and effectively with the economic, political, and administrative dimensions of the technological challenges of the 21st century.

The Master of Science in Technology and Policy is an engineering research degree with a focus on the increasingly central role of technology in the framing, formulation, and resolution of policy problems. Many students combine TPP's curriculum with complementary subjects to obtain dual degrees in TPP and either a specialized branch of engineering or an applied social science, such as political science or urban studies and planning.

TPP's coursework provides a solid grounding in technology and policy by combining advanced subjects in the student's chosen technical field with courses in economics, politics, modern quantitative methods, and social science. All students must complete a satisfactory research thesis that has a substantial technology and policy component. In order to prepare students for effective professional practice, TPP stresses leadership and communication. It also encourages students to participate in TPP's summer internship program, which places students in government and industry in the US and around the world.

The TPP curriculum consists of three blocks of subjects and a research thesis. The first block is a required integrative subject in technology and policy and a subject in applied quantitative methods. The second block focuses on training in formal frameworks for policy development and consists of subjects in microeconomics, political economy, and one core restricted elective that treats problems of technology and policy from a domain that is outside that of the students' area of research concentration and deepens the students' understanding of framings and rationales for governance in this area. The third block comprises a minimum of three coherent electives that fulfill professional and research objectives. The research thesis is the culmination of scholarship integrating technology and policy.

Completion of the academic and research requirements of the TPP SM typically takes four terms.

The TPP curriculum normally begins in September; applications are due by December 15. TPP seeks applicants with relevant work or research experience as well as the ability to demonstrate evidence of leadership and initiative in their professional or other activities. All applicants should have a strong basis in engineering or science. For the 2026 admissions cycle, the GRE General Test will be optional.

Contact the TPP program office (*tpp@mit.edu*), Room E17-373, 617-258-7295, for additional information.

Doctor of Philosophy in Social and Engineering Systems

The Doctor of Philosophy in Social and Engineering Systems (SES) (*https://catalog.mit.edu/degree-charts/phd-social-engineering-systems*) is focused on addressing concrete and societally significant problems by combining methods from computing, data science and statistics, engineering, and the social sciences. The program includes coursework that prepares students for advanced, rigorous, and original research leading to a doctoral thesis. Both coursework and research must include breadth and depth in engineering and quantitative methods, as well as in the social sciences, and in a particular application or problem domain.

Student research in SES is

- Driven by problems of societal interest, in areas including, but not limited to energy, finance, health care, social networks, urban science, as well as in policy-related topics.
- Involves quantitative methods of computing and information sciences. The program is focused on problems that can be addressed through mathematical modeling and data analysis.
- Relies on real-world data. Research is expected to analyze data from the application domain of interest and draw upon the training provided in statistics, etc., through the program coursework.
- Engages societal aspects of the problem, incorporating theories and tools from the social sciences in the research.

An orientation and core component ensures that all SES students share a common foundation. Students use the core subjects to fulfill part of their Information Systems and Decision Science Focus and Social Science Focus requirements. Additional coursework in those focuses should be at a more advanced level. 6.7700[J] Fundamentals of Probability is typically used to satisfy the Information Systems and Decision Science Focus requirement for a subject with substantial math content. Likewise, the Statistics Core subjects can satisfy the Information Systems and Decision Science Focus requirement for a subject that covers the statistical processing of data. Students are encouraged to satisfy 12 units of the Problem Domain requirement with an internship for academic credit over a summer term (IDS.955 Practical Experience in Data, Systems, and Society). They may also use a subject from their Social Science Focus to satisfy one of the required subjects for the Problem Domain Focus.

Students are not required to repeat substantial, relevant graduate subjects they may have already taken but are encouraged to take more advanced coursework that furthers their preparation. In some cases, especially when no such coursework is available, waivers for some of the requirements may be granted by the graduate program committee. In all cases, however, at least 75 units used to satisfy the coursework portion of the program—IDS.900 Doctoral Seminar in Social and Engineering Systems, the Core, and the focuses in Information Systems and Decision Science Focus, Social Science Focus, and Problem Domain Focus—must be taken while enrolled in SES.

By the end of the second regular term in the program, the student must identify a research advisor and submit the first draft of their program plan to the IDSS Academic Office. Thereafter, the program plan must be regularly updated and available during subsequent academic advising meetings with the academic advisor, research advisor, and IDSS Academic Office. The final program plan must be approved by the academic advisor and research advisor, and submitted to the IDSS Academic Office for approval by the graduate program committee, no later than Registration Day of the student's penultimate term.

Students qualify as candidates for the doctoral degree in two phases: by passing a written qualifying exam (typically by strong performance in Core subjects or, in special cases, through the cumulative final exam for a Core subject); and by passing an oral qualifying exam. Details on timing, number of attempts, and grade thresholds are available on the program website (*https://idss.mit.edu/academics/ses*), but no student is allowed more than two attempts to qualify.

All students must complete a teaching traineeship as well; most do this after the written qualifying exam. This requirement must be met before accepting a teaching assistantship.

Within one year of passing the oral qualifying exam, candidates must form a complete doctoral committee and submit a thesis proposal to the program. The student's research advisor assigns the final grade for IDS.970 Pre-Thesis Research on the basis of the approved thesis proposal. Thereafter, candidates register for research units using IDS.ThG Graduate Thesis.

Students and candidates must register for a minimum of 6 research units every term. Normal fall and spring term registration is 12–36 research units; normal summer term registration is 24 units. Students are expected to graduate within four-and-a-half to six years. Program durations closer to six years are normal for students building up a publication and teaching portfolio in preparation for an academic job search.

The PhD in SES is a full-time, residential program. Applications are due by December 15; admitted students start the program the following September.

Further information about SES is available on the program website (*https://idss.mit.edu/academics/ses*) or by contacting the IDSS Academic Office (*idss_academic_office@mit.edu*).