

## MIT STEPHEN A. SCHWARZMAN COLLEGE OF COMPUTING

Advances in computing will be a defining force in the next phase of human history. This is perhaps most visible with the development of artificial intelligence (AI) systems that augment or replace human decision making and reasoning. These technologies will deliver opportunities we cannot yet imagine. At the same time, they will pose important and growing societal and ethical challenges and responsibilities regarding issues such as privacy, public safety, trustworthiness of information, the nature of work, and security of nations.

In this galvanizing moment, the MIT Stephen A. Schwarzman College of Computing (<https://computing.mit.edu>) aims to address the opportunities and challenges of the computing age — from hardware, to software, to algorithms, to artificial intelligence — by transforming the capabilities of academia in three keys areas:

- **Computing fields:** Support the rapid growth and evolution of computer science and computational areas of allied fields such as electrical engineering, as reflected notably in the rise of AI.
- **Computing across disciplines:** Facilitate productive research and teaching collaborations between computing and other fields, rather than place one field in service of another.
- **Social and ethical aspects of computing:** Lead the development of and changes in academic research and education, and effectively inform practice and policy in industry and government.

With its initial organizational structure effective January 1, 2020, and scheduled completion of a new building on the MIT campus in 2023, the MIT Schwarzman College of Computing will:

- Reorient the Institute to not only deliver the latest advances in computer science and AI but also discover the power of computing in every field of study on campus, while ensuring that the future of computing is shaped by insights from other disciplines.
- Create 50 new faculty positions located both within the college and shared with other academic departments across MIT. Provide a structure for collaborative education, research, and innovation in computing across all of MIT's schools.
- Educate students in every discipline to be “bilingual,” so they can responsibly use and develop computing technologies to help make a better world. Transform education and research in societal, public policy, and ethical considerations relevant to computing.

### Origins

The formation of the college (<https://computing.mit.edu/history>) was motivated by major trends both inside and outside of MIT. Within the Institute, the numbers of students declaring majors and choosing

classes in computer science have reached historic highs. And newly created joint majors between computer science and other fields, including biology and economics, are also proving popular. The MIT Schwarzman College of Computing will enable the creation of new and innovative educational programs, and produce creative computational thinkers and doers with the cultural, ethical, and historical consciousness to use technology for the common good — leaders who will offer the world new technological possibilities grounded in human values.

Similarly, in fields far beyond engineering and science — from political science and linguistics to anthropology and the arts — there are burgeoning opportunities for current and future research to benefit from advanced computational knowledge and capabilities. The college aims to empower researchers to lead in such research in computer science, AI, and across a broad range of disciplines. Their discoveries will leave an indelible imprint on education, the environment, ethics, design, finance, health, music, manufacturing, policy, security, transportation, and more.

At the same time, computing and AI are increasingly woven into every part of the global economy, and the digital portion of the economy has been growing much faster than the whole.

Building on these trends, the college will strengthen computing studies and research across MIT's many areas of excellence, and in turn shape the direction of computing research and education through insights from these fields.

### Organization

The organizational structure of the MIT Schwarzman College of Computing brings together existing MIT programs in computing and developing much-needed new cross-cutting educational and research programs.

#### Academics

- Department of Electrical Engineering and Computer Science (<http://catalog.mit.edu/schools/mit-schwarzman-college-computing/electrical-engineering-computer-science>)
- Institute for Data, Systems and Society (<http://catalog.mit.edu/schools/mit-schwarzman-college-computing/data-systems-society>), including the Technology and Policy Program (<http://catalog.mit.edu/interdisciplinary/graduate-programs/technology-policy>)
- Center for Computational Science and Engineering (<http://catalog.mit.edu/mit/research/center-computational-engineering>)
- Operations Research Center (<http://catalog.mit.edu/mit/research/operations-research-center>)

#### Research

- Abdul Latif Jameel Clinic for Machine Learning in Health (<https://www.jclinic.mit.edu>)

- Computer Science and Artificial Intelligence Laboratory (<https://www.csail.mit.edu>)
- Laboratory for Information and Decision Systems (<https://lids.mit.edu>)
- MIT-IBM Watson AI Lab (<https://mitibmwatsonailab.mit.edu>)
- Quest for Intelligence (<https://quest.mit.edu>)
- Sociotechnical Systems Research Center (<https://ssrc.mit.edu>)

**Cross-Cutting Programs**

- Social and Ethical Responsibilities of Computing (<https://computing.mit.edu/SERC>)
- Common Ground for Computing Education (<https://computing.mit.edu/cross-cutting/common-ground-for-computing-education>)
- Center for Advanced Studies of Computing

**Degrees Offered in the MIT Schwarzman College of Computing**

**Computational Science and Engineering**

SM	Computational Science and Engineering <sup>1</sup>
PhD, ScD	Aerospace Engineering and Computational Science <sup>1 2</sup>
PhD, ScD	Chemical Engineering and Computation <sup>1</sup>
PhD, ScD	Civil Engineering and Computation <sup>1</sup>
PhD, ScD	Computational Earth, Science and Planetary Sciences <sup>1</sup>
PhD, ScD	Computational Materials Science and Engineering <sup>1</sup>
PhD, ScD	Computational Nuclear Science and Engineering <sup>1</sup>
PhD, ScD	Environmental Engineering and Computation <sup>1</sup>
PhD, ScD	Mathematics and Computational Science <sup>1</sup>
PhD, ScD	Mechanical Engineering and Computation <sup>1</sup>
PhD, ScD	Nuclear Engineering and Computation <sup>1</sup>

**Data, Systems, and Society**

SM	Technology and Policy
PhD, ScD	Social and Engineering Systems
PhD	Social and Engineering Systems and Statistics
PhD	Aeronautics and Astronautics and Statistics
PhD	Cognitive Science and Statistics
PhD	Economics and Statistics
PhD	Mathematics and Statistics
PhD	Mechanical Engineering and Statistics
PhD	Neuroscience and Statistics
PhD	Physics, Statistics, and Data Science
PhD	Political Science and Statistics

**Electrical Engineering and Computer Science (Course 6)**

SB	Artificial Intelligence and Decision Making
SB	Computer Science and Engineering

SB	Electrical Engineering and Computer Science
SB	Electrical Science and Engineering
SM	Electrical Engineering and Computer Science
MASc	Artificial Intelligence and Decision Making
SM/MBA	Engineering/Management—dual degree with Leaders for Global Operations Program <sup>1</sup>
MEng	Computer Science, Economics, and Data Science
MEng	Electrical Engineering and Computer Science
Electrical Engineer	
Engineer in Computer Science	
PhD, ScD	Computer Science
PhD, ScD	Computer Science and Engineering
PhD, ScD	Electrical Engineering
PhD, ScD	Electrical Engineering and Computer Science

**Operations Research**

SM	Operations Research <sup>1</sup>
SM/MBA	Operations Research/Management—dual degree with Leaders for Global Operations Program <sup>1</sup>
PhD	Operations Research <sup>1</sup>

<sup>1</sup> See *Interdisciplinary Programs* (<http://catalog.mit.edu/interdisciplinary>).  
<sup>2</sup> Students who matriculated in the Department of Aeronautics and Astronautics doctoral program in academic year 2023–2024 or earlier can choose either PhD/ScD in Computational Science and Engineering or the PhD/ScD in Aerospace Engineering and Computational Science. AeroAstro/CSE students who matriculate in academic year 2024–2025 or later will receive the PhD/ScD in Aerospace Engineering and Computational Science.

**Admissions**

The selection process at MIT is holistic and student centered; each application is evaluated within its unique context. Selection is based on outstanding academic achievement as well as a strong match between the applicant and the Institute.

Undergraduate applicants do not apply to a particular school, department, or program. Although the application asks about a preferred field of study, admitted undergraduates are not required to choose a major until their sophomore year. Admissions information for regular and transfer applicants (<http://catalog.mit.edu/mit/undergraduate-education/admissions>) is provided in the Undergraduate section (<http://catalog.mit.edu/mit/undergraduate-education>), as well as on the undergraduate admissions website (<https://mitadmissions.org>).

Applicants for graduate study apply directly to their particular department or program of interest. See the individual department and program descriptions for specific requirements.

### **Office of the Dean**

Daniel Huttenlocher, PhD  
Dean, MIT Schwarzman College of Computing  
Henry Ellis Warren (1894) Professor of Electrical Engineering and Computer Science

Asuman E. Ozdaglar, PhD  
Deputy Dean of Academics, MIT Schwarzman College of Computing  
Head, Department of Electrical Engineering and Computer Science  
MathWorks Professor of Electrical Engineering and Computer Science

David I. Kaiser, PhD  
Associate Dean for Social and Ethical Responsibilities of Computing,  
MIT Schwarzman College of Computing  
Germeshausen Professor of the History of Science  
Professor of Physics

Julie A. Shah, PhD  
Associate Dean for Social and Ethical Responsibilities of Computing,  
MIT Schwarzman College of Computing  
Associate Professor Aeronautics and Astronautics

Aude Oliva, PhD  
Director of Strategic Industry Engagement, MIT Schwarzman College  
of Computing  
MIT Director, MIT-IBM Watson AI Lab

Alana Anderson, PhD  
Assistant Dean for Diversity, Equity, and Inclusion

Eileen Ng, MBA  
Assistant Dean for Administration

Yumi Yasutake  
Assistant Dean of Development