

HARVARD-MIT HEALTH SCIENCES AND TECHNOLOGY PROGRAM

Graduate Study

Medical Sciences (HST MD Program)

Who is the program for?

HST's MD program is designed for bold, curious students who aspire to careers as physician-scientists. We're committed to welcoming qualified applicants from a wide range of communities, backgrounds, and experiences.

Half of the students in our MD program have majored in biological sciences and half in physical sciences. They're comfortable with mathematics and computational methods, biochemistry, and molecular biology.

How is the HST MD program different from other MD programs?

HST adds a new dimension to medical school. The HST MD curriculum highlights the frontiers of what is known and what remains to be discovered. As an HST student, you'll gain a deep understanding of the fundamental principles underlying disease and acquire the clinical skills of traditional medical training. In addition, you'll undertake a meaningful research project in one of several hundred laboratories at Harvard, MIT, and local hospitals. It's the perfect beginning to a multidisciplinary career as a physician-scientist.

What degree will I earn?

You'll earn an MD degree from Harvard Medical School.

What can I do with this degree?

As a graduate of the program, you can become a pioneering physician-scientist, ready to care for patients and lead translational research to develop preventative, diagnostic, and therapeutic innovations.

What can I expect?

In your first two years, you'll build a deep understanding of the medical sciences and lay the groundwork for further exploration. You'll explore the complex mechanics of human biology, study the technical underpinnings of healthcare, and gain a fundamental knowledge of molecular biology, biotechnology, engineering, and the physical sciences. You'll also explore the human side of medical science, meeting with a variety of patients in clinical settings.

You will also conduct research in a lab at MIT, Harvard, or one of the area teaching hospitals, building your expertise and learning from a thriving community of researchers, educators, and fellow students.

Beginning in April of your second year, you'll join your classmates from the other curricular track at Harvard Medical School in clinical

clerkships and electives, gaining valuable real-world experience in a clinical setting.

How long will it take me to earn an MD degree from HST?

The HST MD program is designed to be completed in four years, with an option to extend the program to five years by including a year of full-time research. This additional research year typically occurs after the second year of the MD curriculum.

Can the HST MD be combined with other degree programs?

Many HST MD students join the Harvard/MIT MD-PhD program, earning a PhD in addition to their medical training. As an HST MD student, you may also pursue dual degrees in business (MBA), public health (MPH), public policy (MPP), or law (JD).

To learn more about the HST MD curriculum, visit the HST program overview (<https://meded.hms.harvard.edu/health-sciences-technology>) on Harvard Medical School's website.

Medical Engineering and Medical Physics

Who is the program for?

HST's Medical Engineering and Medical Physics (MEMP) PhD program offers a unique curriculum for engineers and scientists who want to impact patient care by developing innovations to prevent, diagnose, and treat disease. We're committed to welcoming qualified applicants from a wide range of communities, backgrounds, and experiences.

How is HST's MEMP PhD program different from other PhD programs?

As a MEMP student, you'll choose one of 11 technical concentrations and design an individualized curriculum to ground yourself in the foundations of that discipline. You'll study medical sciences alongside MD students and become fluent in the language and culture of medicine through structured clinical experiences. You'll select a research project from among laboratories at MIT, Harvard, and local hospitals, then tackle important questions through the multiple lenses of your technical discipline and your medical training. As a result, you will learn how to ask better questions, identify promising research areas, and translate research findings into real-world medical practice.

What degree will I earn?

You'll earn a PhD awarded by MIT or by the Harvard Faculty of Arts and Sciences.

What can I do with this degree?

Lead pioneering efforts that translate technical work into innovations that improve human health and shape the future of medicine.

How long will it take me to earn a PhD in HST's MEMP program?

The average time-to-degree for MEMP PhD students is six years.

What can I expect?

You'll begin by choosing a concentration in a classical discipline of engineering or physical science. During your first two years in HST, you'll complete a series of courses to learn the fundamentals of your chosen area.

In parallel, you'll become conversant in the biomedical sciences through preclinical coursework in pathology and pathophysiology, learning side-by-side with HST MD students.

With that foundation, you'll engage in truly immersive clinical experiences, gaining a hands-on understanding of clinical care, medical decision making, and the role of technology in medical practice. These experiences will help you become fluent in the language and culture of medicine and gain a first-hand understanding of the opportunities for—and constraints on—applying scientific and technological innovations in health care.

You'll also take part in two seminar classes that help you to integrate science and engineering with medicine while developing your professional skills.

A two-stage qualifying examination tests your proficiency in your concentration area, your skill at integrating information from diverse sources into a coherent research proposal, and your ability to defend that research proposal in an oral presentation.

Finally, as the culmination of your training, you'll investigate an important problem at the intersection of science, technology, and medicine through an individualized thesis research project, with opportunities to be mentored by faculty in laboratories at MIT, Harvard, and affiliated teaching hospitals.

The program's academic curriculum includes multiple components that prepare students to be medical innovators who will advance human health. First, HST provides MEMP students with a thorough graduate education in a classical discipline of engineering or physical science. Each student selects a concentration area, such as biological engineering, mechanical engineering, chemistry and chemical engineering, materials science, electrical engineering, computer science, physics, aeronautics and astronautics, brain and cognitive science, or nuclear science and engineering, and completes substantial coursework in this discipline.

Students then become conversant in the biological sciences through preclinical coursework followed by a series of clinical experiences. Courses such as pathology and pathophysiology are taken together with HST MD students. Then students engage in immersive clinical experiences where they acquire a hands-on understanding of clinical care, medical decision-making, and the role of technology in medical practice. Through these experiences, students become fluent in the language and culture of medicine and gain a firsthand understanding of the opportunities for, and constraints on, applying scientific and technological innovations in health care.

Two seminar classes help students integrate science and engineering with medicine and develop professional skills. A two-stage qualifying examination ensures that each student is proficient in his or her chosen concentration area, can integrate information from diverse sources into a coherent research proposal, and is able to defend that research proposal in an oral presentation.

Finally, MEMP students investigate important problems at the interfaces of science, technology, and clinical medicine through individualized research projects that prepare them to undertake independent research. MEMP students have the opportunity to perform thesis research in laboratories at MIT, Harvard, and the Harvard affiliated teaching hospitals.

Neuroimaging and bioastronautics are areas of specialization within MEMP for which HST offers specially designed training programs. MEMP candidates may choose to apply through MIT, Harvard, or both. Those applying to MEMP through MIT should submit a single application. Those applying to MEMP through Harvard must also apply to the School of Engineering and Applied Sciences or the Biophysics Program. Additional information about applying to MEMP is available on the MEMP website (<http://hst.mit.edu/academics/memp/admissions>).

Inquiries

Visit the website (<https://hst.mit.edu>) or email HST (hst@mit.edu) for additional information on degree programs, admissions, and financial aid.