

## HARVARD-MIT HEALTH SCIENCES AND TECHNOLOGY PROGRAM

### Graduate Study

#### *Medical Sciences (HST MD Program)*

##### **Is this program a good fit for me?**

HST's MD program is designed for bold, curious students who aspire to careers as physician-scientists. We're committed to welcoming 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. HST students gain a deep understanding of the fundamental principles underlying disease and acquire the clinical skills of traditional medical training. In addition, they 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?**

HST students earn an MD degree from Harvard Medical School.

##### **What can I do with this degree?**

Graduates of the program can become pioneering physician-scientists, ready to care for patients and lead translational research to develop preventative, diagnostic, and therapeutic innovations.

##### **What can I expect?**

In their first two years, students build a deep understanding of the medical sciences and lay the groundwork for further exploration. They 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. HST students also explore the human side of medical science, meeting with a variety of patients in clinical settings.

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

Beginning in April of the second year, HST students join their 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. HST MD student may also pursue dual degrees in business (MBA), public health (MPH), public policy (MPP). More information (<https://meded.hms.harvard.edu/combined-degrees>) can be found on the program website.

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*

##### **Is this program a good fit for me?**

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 applicants from a wide range of communities, backgrounds, and experiences.

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

Each MEMP student chooses one of 11 technical concentrations and design an individualized curriculum to ground themselves in the foundations of that discipline. They study medical sciences alongside MD students and become fluent in the language and culture of medicine through structured clinical experiences. They select a research project from among laboratories at MIT, Harvard, affiliated hospitals, and research institutes, then tackle important questions through the multiple lenses of their technical discipline and medical training. As a result, MEMP students 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?**

MEMP students 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?**

Similar to other PhD programs in MIT's School of Engineering, the average time-to-degree for MEMP PhD students is less than six years.

### **What can I expect?**

MEMP students begin by choosing a concentration in a classical discipline of engineering or physical science. During the first two years in HST, each student completes a series of subjects to learn the fundamentals of their chosen area.

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

With that foundation, students will 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 students 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.

MEMP students also take part in two seminar classes that help them to integrate science and engineering with medicine while developing their professional skills. Then, they design an individualized professional perspectives experience that allows them to explore career paths in an area of their choice: academia, medicine, industry, entrepreneurship, or the public sector.

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

Finally, as the culmination of their training, MEMP students 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.

### **Additional Application Information**

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 (<https://hst.mit.edu/applying-hst/applying-medical-engineering-and-medical-physics-memp-phd-program>).

### **Inquiries**

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