DARTMOUTH

Questions? Please email:
undergraduate.engineering@dartmouth.edu

To apply, visit:
admissions.dartmouth.edu

High school or transfer students interested in pursuing the Bachelor of Arts (AB) or Bachelor of Engineering (BE) degrees at Dartmouth must apply through Dartmouth's Office of Undergraduate Admissions. There is no separate application process to Thayer School of Engineering at Dartmouth for undergraduate programs.

engineering.dartmouth.edu

@thayerschool

Cover Photo: Catha Mayor and Mark Washburn
Back Cover Photo: Catha Mayor

DARTMOUTH ENGINEERING

Undergraduate Engineering at Dartmouth

Human-centered, by design.

> Students are not just admitted into engineering—*they are admitted into Dartmouth*. They come, explore, gain critical thinking skills, go deep into engineering, play sports, learn a language, and study abroad. Students can be engineers and still access the full Dartmouth experience.
>
> Professor Laura Ray

As a Dartmouth engineering sciences major, you'll earn a Bachelor of Arts (AB) with the option to also earn a professional Bachelor of Engineering (BE) degree.

Why? Because problems don't happen in a vacuum—and solutions don't come from science or engineering alone. Dartmouth's human-centered, systems-based approach to engineering will teach you how to consider the social, economic, and environmental impacts of your work. You will gain the technical skills necessary to solve complex challenges, while immersed in the liberal arts that deepen your understanding of our world.

You'll be a better engineer for it.

1st
Gender Parity
First comprehensive university in the U.S. to award undergraduate engineering degrees to a majority-women class.

50%
Women in Engineering
Women earned more than half of the Bachelor of Engineering and Master of Engineering Management degrees awarded in 2024.

25%
C-Suite Leadership
More than a quarter of engineering alumni enter Chief-level executive leadership positions within 5 to 10 years of graduation.

Photo by Mark Washburn

A student team in the “Introduction to Engineering” course won the Phillip R. Jackson Award for their final project prototype—an improved respiratory system for welders that is affordable, comfortable, and easy to use.

Photo by Haley Tucker

Engineer without boundaries.

Our single, integrated department of engineering gives you freedom to explore and follow your interests wherever they may lead—from energy to solar cells, biotechnology to artificial intelligence, climate change to the Arctic, and more. You’ll learn from faculty across engineering disciplines, collaborate with students throughout Dartmouth, and gain insights that strengthen your problem-solving and technical skills.

The possibilities are endless.

The “DHElios” team—posing here with their prototype of a solar thermal panel—is working to improve solar-powered stoves for rural schools in Sub-Saharan Africa.

Photo by Catha Mayor

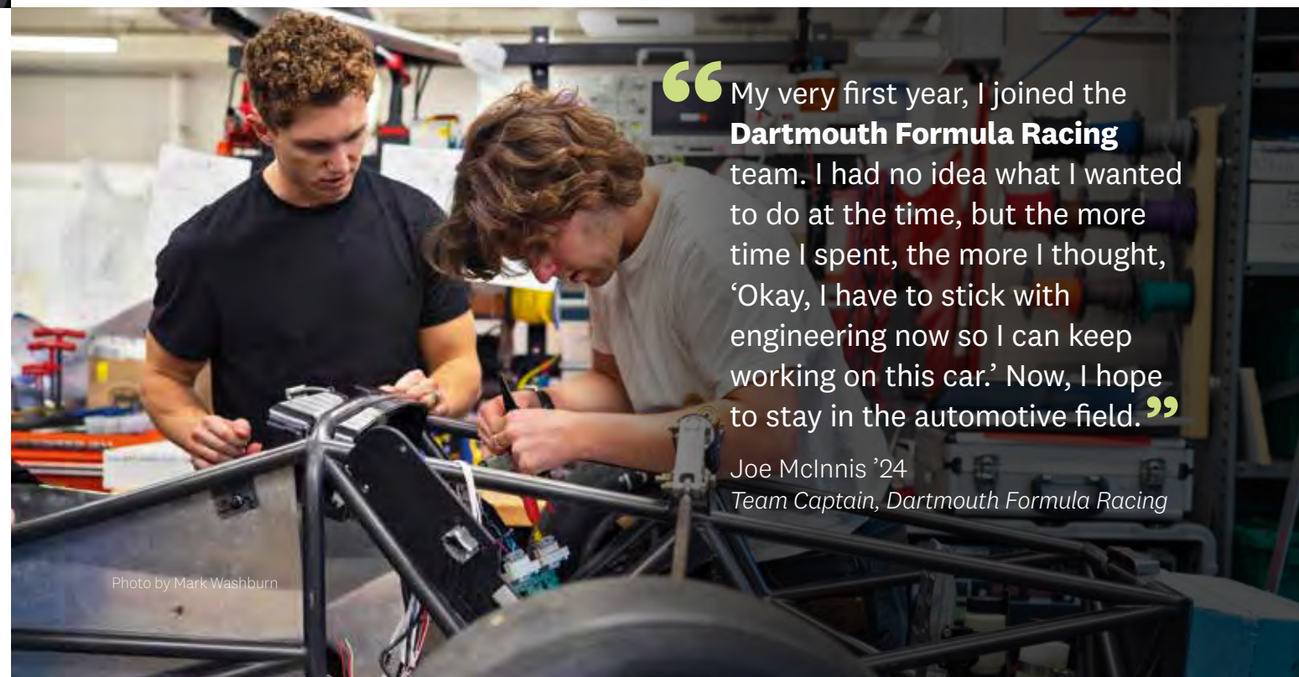
Explore your interests even further through a wide range of student-led groups, including:

Dartmouth Humanitarian Engineering (DHE), a student-led group that organizes service initiatives around the world to improve lives through human-centered, sustainable, and economically feasible engineering solutions.

Teamwork makes the dream work.

Our project-based curriculum will help you develop skills to work effectively with teammates who bring diverse ideas and talents to the table and strengthen your capacity for collaboration *and* leadership.

> “The most rewarding part of the ‘Introduction to Engineering’ course was working as a team. Most of us had no machine shop experience or with the engineering design process, so it was fun to work together to come up with a good solution.”
>
> Louis Latulippe ’25



> “My very first year, I joined the **Dartmouth Formula Racing** team. I had no idea what I wanted to do at the time, but the more time I spent, the more I thought, ‘Okay, I have to stick with engineering now so I can keep working on this car.’ Now, I hope to stay in the automotive field.”
>
> Joe McInnis ’24
> *Team Captain, Dartmouth Formula Racing*

Photo by Mark Washburn

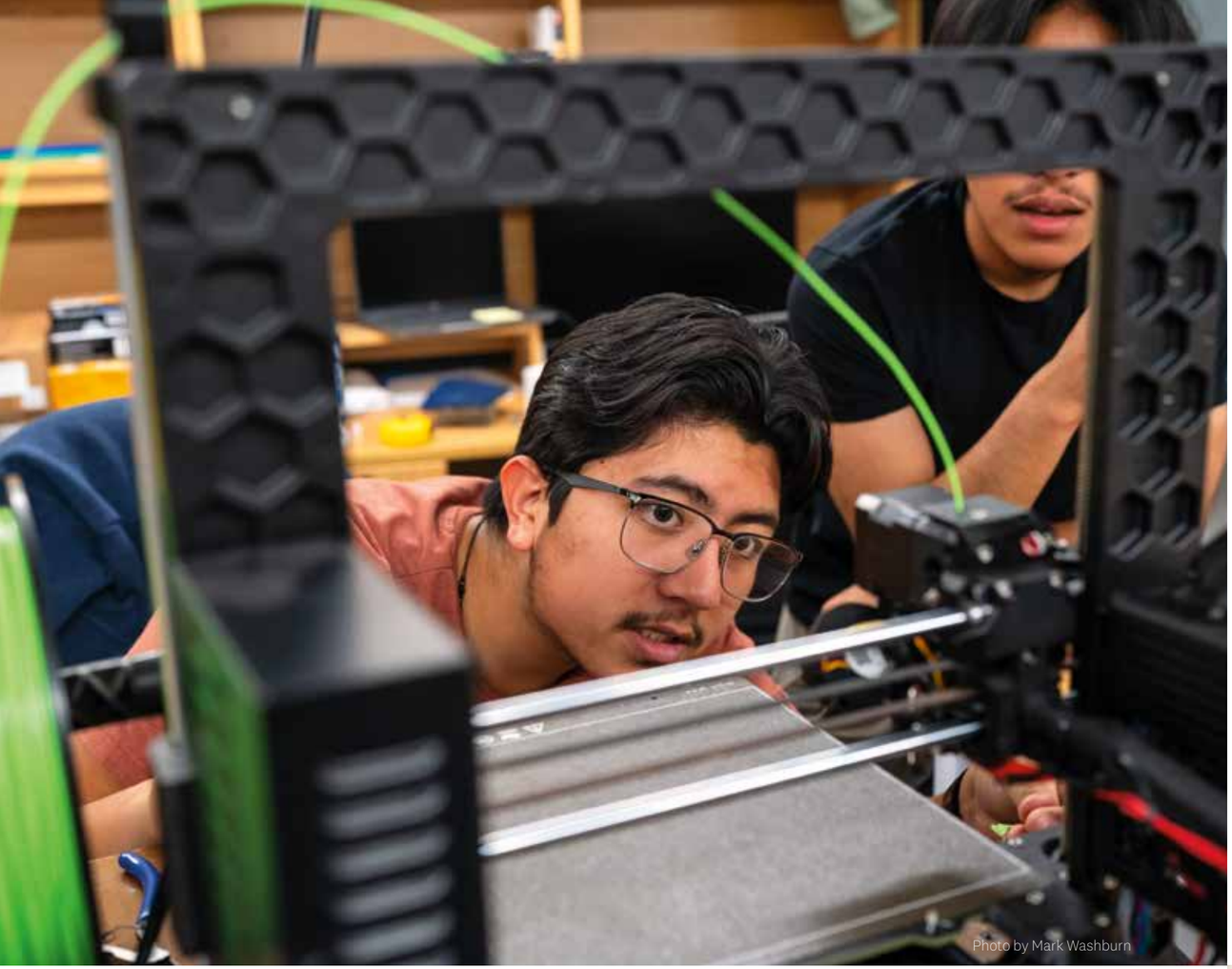


Photo by Mark Washburn

Supportive, collaborative community.

Within Dartmouth's close-knit community, you will not only have access to campus-wide services but also to engineering-specific resources and support, including:

- **Dartmouth Emerging Engineers (DEE)**, which provides support to all first-year students interested in engineering to ensure their success. DEE offers peer tutoring and mentoring, group study sessions, invitations to special events, machine shop tours—and *snacks!*

- Our dedicated **Engineering Career Services** office, which offers tailored advising and resources, including engineering career fairs, job and internship search support, graduate school application assistance, and networking opportunities.

> "Dartmouth faculty truly want to help students grow as scientists and engineers. So, don't be afraid to knock on a faculty member's door, literally or metaphorically. The culture at Dartmouth really encourages that."

Professor Peter Chin

Hands-on, from the start.

The best way to *learn* engineering is to *do* engineering. From your introductory class to your culminating experience, you will design and build solutions to real-world problems, with access to project labs, the machine shop, and the makerspace to make it happen.

> "The machine shop is a place where students of all skills levels bring their designs into reality. What they get in our shops is the opportunity to move from theory into practice."

Lee Schuette
MShop Operations Manager

Photo by Rob Strong

Students in the Green City Sustainable Engineering program in Berlin visited a 36-yard-tall “Bagger 1452” bucket wheel excavator, a remnant of the city’s brown coal mining industry before Germany’s transition to clean energy.

Photo by Andreas Böhlke

Engage in active research.

Curious about what it’s like to be on a research team? Through programs like First-Year Research in Engineering Experience (FYREE), you will have many opportunities to find out. Gain valuable research experience in graduate labs, while contributing to groundbreaking discoveries alongside faculty, PhD students, and post-doctoral researchers.

> “Research here is extremely accessible for undergraduates. What’s amazing is that securing a paid research opportunity as a first-year student is very common at Dartmouth.”

Iroda Abdulazizova ’26

See the world. Understand the world.

Study abroad and gain critical global perspectives that enhance your skills as an engineer. Choose from a variety of opportunities through Dartmouth’s Frank J. Guarini Institute for International Education, including programs specifically for engineering majors:

- **Green City Program in Germany**, an interdisciplinary engineering and language program focused on sustainable engineering.
- **International exchange** with universities in **Denmark**, **Hong Kong**, **New Zealand**, and **Thailand**.

> “Watching our students immerse themselves in Berlin’s vibrant culture and seeing them develop further as thoughtful, globally-minded engineers and environmental advocates has been truly inspiring.”

Professor Petra Bonfert-Taylor
Co-Director, Green City Sustainable Engineering Program in Germany

63%

of engineering majors take part in graduate-level research during their time at Dartmouth.

Photo by Don Hamerman

Moses Matanda ’25 began his research journey through Dartmouth’s FYREE program, which provides undergraduate students with early exposure to hands-on research and mentorship. Under the guidance of Professor Solomon Diamond, Moses and his teammates won the Brieanna S. Weinstein Engineering Design Prize for their work to improve a neonatal continuous positive airway pressure (CPAP) interface.


Photo by Mark Washburn

An entrepreneurial ecosystem.

From the start, your classes will focus on impact. You'll be challenged to design and develop novel solutions to real-world problems. You'll research patents, create a business plan, and pitch your idea to a review board. Tap into Dartmouth-wide resources, nurture your innovative spirit, and learn from faculty and alumni who will provide direct insights and expertise on the entrepreneurship process.

54%

Faculty Entrepreneurs

More than half of Dartmouth Engineering's faculty have founded companies.

300+

Patents

U.S. patents issued to engineering faculty and students for original work.

4th

Alumni Start-Ups

Top-ranked university for venture-backed alumni start-up companies per capita.

Bachelor of Arts *and* Bachelor of Engineering?

Two degrees. How does it work?

All engineering sciences majors at Dartmouth earn the **AB**, an undergraduate liberal arts degree. For more depth in a particular engineering discipline, most students also pursue the **BE**, a professional degree program accredited by the Engineering Accreditation Commission of ABET. With advance planning, students can earn both the **AB** and **BE** within four years. Many opt for an additional year of study.

AB

- Bachelor of Arts (AB) is the undergraduate liberal arts degree from Dartmouth.
- Designed for breadth of study, with no required engineering concentration.
- Emphasizes systems-based problem-solving across engineering disciplines.
- Requirements for the AB can be completed within 4 years.

AB+BE

- Bachelor of Engineering (BE) is the ABET-accredited professional degree awarded by Thayer School of Engineering at Dartmouth.
- Designed for *depth of study* within a chosen engineering concentration.
- BE requires 9 additional engineering courses beyond the requirements for the AB.
- Requirements for the BE can be completed within 4 or 5 years. (About 40% of students complete the BE within 4 years.)

Engineering Sciences Major

PREREQUISITES			
Mathematics*	MATH 3 Calculus		3 courses
	MATH 8 Calculus of Functions of One and Several Variables		
	MATH 11 Accelerated Multivariable Calculus *or* MATH 13 Calculus of Vector-Valued Functions		
Physics	PHYS 13 Introductory Physics I *and* PHYS 14 Introductory Physics II		2 courses
Chemistry**	CHEM 5 General Chemistry		1 course
	CHEM 11 General Chemistry		
Computer Science **(Choose 1 option)**	ENGS 20 Introduction to Scientific Computing (May not be taken under Non-Recording Option.)		1 or 2 courses
	COSC 1 Introduction to Programming and Computation *and* COSC 10 Problem Solving via Object-Oriented Programming		
REQUIRED COURSES			
Common Core Courses	ENGS 21 Introduction to Engineering (Should be taken sophomore year.)		3 courses
	ENGS 22 Systems		
	ENGS 23 Distributed Systems and Fields		
Distributive Core Courses **(Choose 2 options)**	ENGS 24 Science of Materials		2 courses
	ENGS 25 Introduction to Thermodynamics		
	ENGS 26 Control Theory		
	ENGS 27 Discrete and Probabilistic Systems		
	ENGS 28 Embedded Systems		
Gateway Courses **(Choose 2 courses, each from a different discipline)**	**Electrical**	ENGS 31 Digital Electronics	2 courses
		ENGS 32 Electronics: Introduction to Linear and Digital Circuits	
	Mechanical	ENGS 33 Solid Mechanics	
		ENGS 34 Fluid Dynamics	
	Chemical/ Biochemical	ENGS 30 Biological Physics	
		ENGS 35 Biotechnology and Biochemical Engineering	
		ENGS 36 Chemical Engineering	
	Environmental	ENGS 37 Introduction to Environmental Engineering	
Electives **(Choose 2 courses, either both from Engineering Sciences or one from each group)**	**Engineering Sciences**	Any ENGS courses numbered 20 and above (excluding ENGS 80 and 87)	2 courses
	Science/Math	ASTR 15 and above; BIOL 12 and above (excluding BIOL 52); CHEM 6, 10 and above (excluding CHEM 63); EARS 31, 33, 35, 37, 40-52, 59, 62, 64, 66-75, 77, 79 and above; ENVS 30 and 79; MATH 17-29, 31, 32, 35, 38, 39, 40, 42, 43, 50 and above; PHYS 19 or 40 and above; COSC 30, 31, 39, 49, 71, 74	

* Students with prior experience with calculus (as demonstrated through AP or IB exams, A-level credit, or placement exam) may place out of MATH 3 and/or Math 8, and may be required instead to take the MATH 8 and 13 sequence, or MATH 11.
** Students with no prior experience in chemistry will be placed in CHEM 5. Students with prior experience with chemistry (as demonstrated through AP or IB exams, A-level credit, or placement exam) automatically receive credit for CHEM 5 and have the option of taking CHEM 11 as a chemistry elective towards the requirements for the AB and/or BE.

Culminating Experience for Majors and Modified Majors

In addition to coursework, all majors and modified majors are required to complete a culminating experience, which may include a thesis, a design project, or advanced engineering sciences course with a significant design or research project, chosen from an approved list.

The advanced engineering course for the culminating experience may be taken as one of the required electives or as an additional course.

CULMINATING EXPERIENCE		
Culminating Experience **(Choose 1 option)**	**Thesis**	ENGS 86 Independent Project *or* ENGS 88 Honors Thesis
	Design Project	ENGS 89 Engineering Design Methodology and Project Initiation (ENGS 89 must be taken as part of the two-course design sequence ENGS 89/90) • Prior to enrollment in ENGS 89, at least 6 engineering sciences courses must be completed: ENGS 21 plus 5 additional courses numbered 22 to 76, and 91 and above. • Students seeking to complete the AB and BE degrees concurrently should note that ENGS 89 may also be counted toward requirements for the BE program.
	Advanced Course	One advanced engineering sciences course with a significant design or research project, normally taken in the senior year. Students should consult the approved list of courses on Thayer's website or with the Chair of the Department of Engineering Sciences.

Bachelor of Engineering (BE)

The BE requires nine additional courses beyond the AB, including focused coursework in the student's chosen engineering concentration. Students planning to pursue both the AB and BE should consult early with the Undergraduate Engineering Program Director or their faculty advisor to plan their course of study.

At least six courses must have significant engineering design content. Required courses and electives include mathematics, basic science, engineering sciences, and engineering design.

The flexibility of the five-year BE program makes it possible for students majoring in physics or computer science at Dartmouth to also obtain the BE with an additional year of study following the AB.

Engineering Majors & Minors

MAJORS

- Engineering Sciences
- Biomedical Engineering
- Engineering Physics

MINORS

- Engineering Sciences
- Human-Centered Design
- Materials Science

MODIFIED MAJORS

Engineering Sciences, modified with:

- Biology
- Chemistry
- Computer Science
- Earth Sciences
- Environmental Sciences
- Public Policy
- Studio Art
- Other Discipline

Fast-Track Multiple Degrees

Graduate-level courses taken for the BE may also count toward requirements for the MEng, MEM, or MS from Dartmouth, allowing students to earn a master's degree within a year of completing the AB degree. Undergraduates may also apply directly to Dartmouth's PhD programs in engineering sciences.

Graduate Degree Pathways

Students can follow several pathways to complete both bachelor's and master's degrees in engineering in a shorter timeframe.

AB + BE + MEng

The Master of Engineering (MEng) degree is a course-based professional degree that provides additional depth within a specific engineering track, including: biological and chemical; biomedical; computer and electrical; energy; materials science; or mechanical, operations, and systems. Dartmouth also offers a fully online MEng degree in computer engineering.

AB + BE + MEM

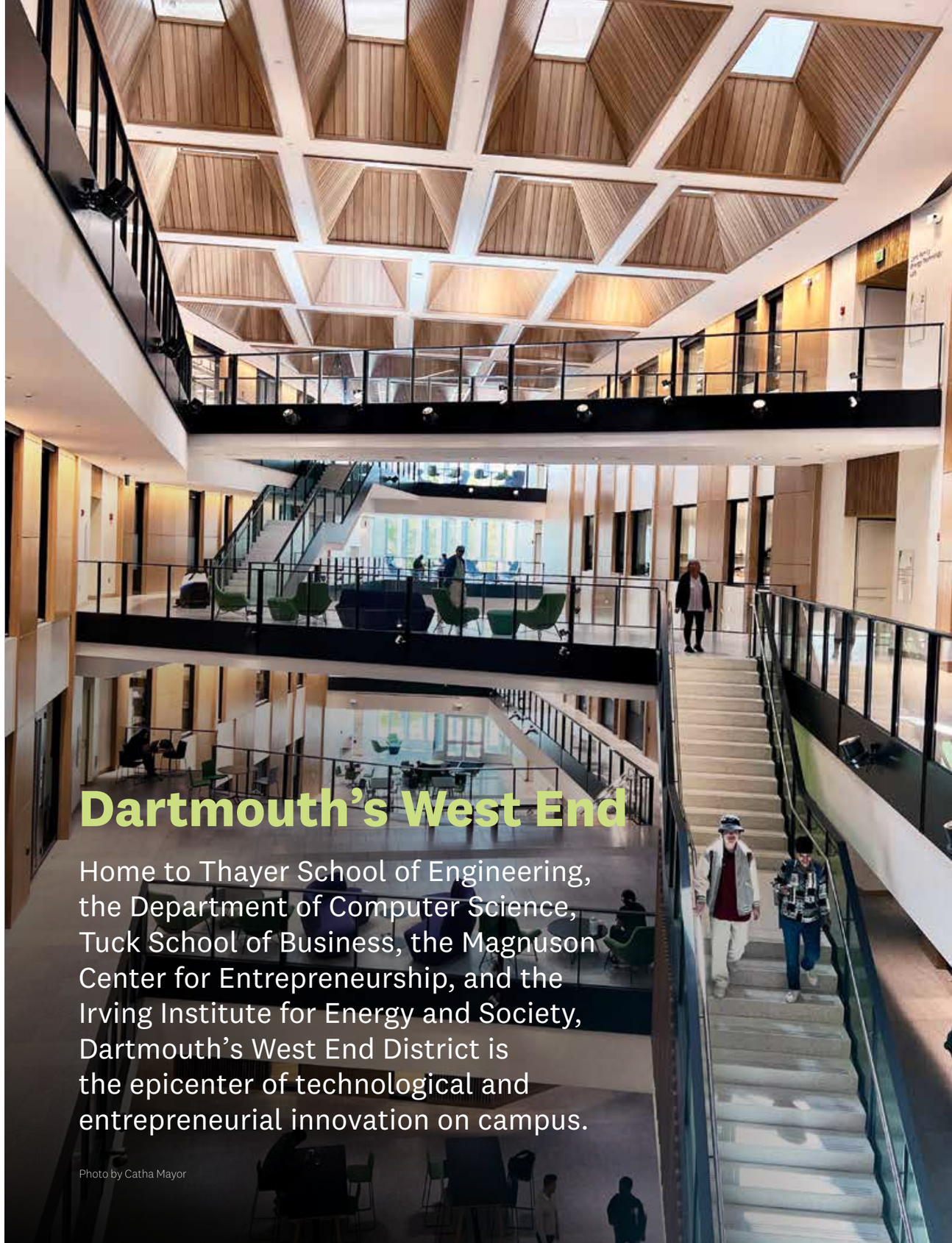
The Master of Engineering Management (MEM) degree integrates courses in engineering and management to prepare graduates for leadership in technology-driven industries. Students may design their own program or focus on data analytics, product management, or entrepreneurship.

AB + BE + MS

Dartmouth BE students continuing graduate-level research with a faculty sponsor may earn the Master of Science (MS) degree within a year of earning the BE. The MS is research-focused and culminates in a thesis. Spaces for the MS are limited, and several spots are reserved for current BE students.

PhD and PhD Innovation Programs

Undergraduates interested in pursuing multi-year research to gain depth and engineering expertise may apply directly to Dartmouth's PhD programs. Dartmouth offers a traditional research-focused PhD, as well as the PhD Innovation Program, the nation's first doctoral-level fellowship that provides additional training, mentoring, and funding to support research translation and entrepreneurial pursuits.



Dartmouth's West End

Home to Thayer School of Engineering, the Department of Computer Science, Tuck School of Business, the Magnuson Center for Entrepreneurship, and the Irving Institute for Energy and Society, Dartmouth's West End District is the epicenter of technological and entrepreneurial innovation on campus.

Photo by Catha Mayor