

The Dual-Degree Program in Engineering at Dartmouth College

Information for Prospective Students

2023-2024 Academic Year

<http://engineering.dartmouth.edu/academics/undergraduate/dual/>

Overview

Thayer School of Engineering at Dartmouth College partners with several liberal arts colleges to offer science majors the opportunity to prepare for a career in engineering. As a student in the dual-degree program you spend your junior (or senior) year on exchange at Dartmouth College taking engineering science courses not available at your home college. Following graduation, you return to Dartmouth for a second year in the Bachelor of Engineering (B.E.) program at Thayer School. The B.E. program is professionally accredited and prepares you to [practice engineering](#) or to pursue graduate work at Thayer School or other universities. Admission to the Dual Degree Program is limited and competitive.

Preparation

You must be prepared to take the core courses in Dartmouth's undergraduate engineering sciences major. Additionally, you must have demonstrated the ability to succeed in a demanding course of study, normally by taking eight or more courses in mathematics, natural science, and computer science in your first two years of college. These courses include, at a minimum, calculus (through vector-valued functions, typically three courses), physics (two courses through mechanics and electromagnetism), one course in general chemistry, and an introduction to computer science and programming.

The courses must all be at a level appropriate to majors in those subjects. They must be taken for letter grades unless, during the Covid-19 pandemic, Pass/Fail or Credit/No credit is the only option. We honor credits awarded by your college for Advanced Placement, A level, and International Baccalaureate courses, but you should then go further by taking additional math and science courses.

First year at Dartmouth

Your first year at Dartmouth will include six undergraduate engineering sciences courses. In addition, you will take two or three non-engineering courses, normally in the humanities or social sciences.

Your program will include these three core courses:

- ENGS 21 — Introduction to Engineering (summer, fall, winter, or spring)
- ENGS 22 — Systems (summer or fall)
- ENGS 23 — Distributed Systems and Fields (fall, winter, or spring; requires 22) — Students who have taken or will take an intermediate course in electromagnetism may take another engineering course instead of ENGS 23.

one or two of the following five distributive core courses:

- ENGS 24 — Science of Materials (summer, winter, or spring)
- ENGS 25 — Thermodynamics (summer, winter, or spring)
- ENGS 26 — Control Theory (fall or spring; requires 22)
- ENGS 27 — Discrete and Probabilistic Systems (summer or fall)
- ENGS 28 — Embedded Systems (winter)

and one or two of these eight gateway courses:

- ENGS 30 — Biological Physics (spring)
- ENGS 31 — Digital Electronics (summer or spring)
- ENGS 32 — Electronics: Introduction to Linear and Digital Circuits (fall or winter; requires 22)

- ENGS 33 — Solid Mechanics (summer, fall, or winter)
- ENGS 34 — Fluid Dynamics (spring; requires 23)
- ENGS 35 — Biotechnology and Biochemical Engineering (fall; cell biology required)
- ENGS 36 — Chemical Engineering (fall; requires 22 and 25)
- ENGS 37 — Introduction to Environmental Engineering (fall)

The Bachelor of Engineering degree requires *two* from Engs 24-28 and *two* from Engs 30-37. Students may complete this requirement in the second year. See the Thayer School Bulletin or, online, <http://engineering.dartmouth.edu/academics/courses/undergraduate/> for other undergraduate engineering electives. See the online Dartmouth catalog for non-engineering courses, <http://dartmouth.smartcatalogiq.com/en/current/orc/Departments-Programs-Undergraduate>.

First Year Enrollment Patterns

Dartmouth operates on a year-round schedule, and rising juniors normally take classes in the summer term. The recommended enrollment patterns for dual degree students are: summer-fall-winter and summer-winter-spring, as well as fall-winter-spring (fall-winter-summer or winter-spring summer is recommended only if the student cannot schedule one of the other three). International students usually must elect fall-winter-spring because of visa restrictions.

Following your first year, you may pursue an industrial internship. Contact the [Thayer School Career Services Office](#) for more information about internship opportunities.

Upper-Level Courses at the Home College

The Bachelor of Engineering program requires at least nine courses in mathematics and basic science (counting the prerequisites in calculus, physics, and chemistry). Examples include linear algebra and differential equations; electromagnetism and atomic physics; organic and physical chemistry; cell, molecular, or environmental biology. The Bachelor of Engineering program also requires a full year (typically eight semester courses) from the arts, foreign language, humanities, and social sciences.

Second Year at Thayer School of Engineering

Your second year at Thayer School (Bachelor of Engineering program) consists of nine courses to develop proficiency in a selected field of engineering and fulfill the other requirements for the degree. The total course count for the Bachelor of Engineering degree, including up to 11 courses transferred from your home institution, is 25 courses: at least nine in mathematics and basic science (counting the prerequisites) and at least 14 in engineering and applied computer sciences. The remaining two courses may be from any qualified STEM discipline. For details, see <http://engineering.dartmouth.edu/academics/undergraduate/be/requirements/>

Costs, Housing, Financial Aid

Dartmouth tuition, fees, room and board, books and miscellaneous costs for the 2021-2022 academic year are \$81,501. Students may also be required to purchase health insurance, which costs \$4,163 for 2021-2022. Expect these costs to be higher in 2022-2023. Dual degree students live on campus during the first year and off campus in the second year.

No financial aid is available from Dartmouth during the first year of the program, since you are on exchange from your home college. At many of our partner schools, the student's financial aid will transfer to Dartmouth for the exchange year. Before applying, check with your financial aid office to see if your aid will follow you to Dartmouth. *Need-based financial aid is available from Thayer School for the second year*. No aid is available for room and board, books, etc, in the second year. Loans may be available in the second year, depending on your financial status and citizenship. [Consult our website for details: https://engineering.dartmouth.edu/academics/admissions/undergraduate/be/tuition-aid](https://engineering.dartmouth.edu/academics/admissions/undergraduate/be/tuition-aid)

To Apply

To apply to the dual-degree program, follow these steps:

- Obtain approval from your college. Consult with your dean or academic advisor regarding the acceptability of Dartmouth courses as electives toward your degree requirements. Also discuss with your advisor how to plan your major around the year spent at Dartmouth.
- Check with your financial aid office about the transfer of aid for your junior year.
- **International students:** See the attached addendum which explains several issues affecting international applicants to the program.
- Arrange for your advisor or other professor who knows you well to write a recommendation. Guidelines for this letter are available at the dual degree website.
- Make your application through our website: <https://dartmouththayer.embark.com/auth/register>
- Complete the application as your fall semester grades are available, and no later than February 1.

You will be notified of the admission decision by April 1. Sometimes we request midterm grades for the spring semester, which will delay the decision to mid-April. Because we have many more applicants than places in the program, some students may be placed on a waiting list. As space becomes available, students may be admitted from the waiting list through the end of April.