

# The Dual-Degree Program in Engineering at Dartmouth College

## 2016-2017 Academic Year

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

### *Overview*

Thayer School of Engineering at Dartmouth College offers science majors at other liberal arts colleges 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 elsewhere. 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. Before coming to Dartmouth you should take, 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. These courses must all be at a level appropriate to majors in those subjects. Making up prerequisites at Dartmouth will complicate your program and restrict your options for engineering courses. We honor Advanced Placement or International Baccalaureate credits awarded by your college. Courses beyond the minimum, *e.g.*, in your science major or supportive of your engineering interest, are strongly recommended and will be considered in evaluating your application.

### *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 (fall, winter, or spring)
- ENGS 22 — Systems (summer or fall)
- ENGS 23 — Distributed Systems and Fields (fall, winter, or spring; requires 22) — The ENGS 23 requirement is waived for students who have taken or will take an intermediate course in electromagnetism.

one or two of the following four core courses:

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

and one or two of these seven gateway courses:

- ENGS 31 — Digital Electronics (summer or spring)
- ENGS 32 — Electronics: Introduction to Linear and Digital Circuits (winter; requires 22)
- ENGS 33 — Solid Mechanics (summer, fall, or winter)
- ENGS 34 — Fluid Dynamics (winter; requires 23)
- ENGS 35 — Biotechnology and Biochemical Engineering (fall; cell and molecular biology recommended)
- ENGS 36 — Chemical Engineering (fall; requires 22 and 25)
- ENGS 37 — Introduction to Environmental Engineering (fall)

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/2015/orc/Departments-Programs-Undergraduate>.

### *Upper-Level Courses at the Home College*

The Bachelor of Engineering program requires at least nine courses in mathematics and natural science (counting the prerequisites in calculus, physics, and chemistry). If you are a science major this requirement will be met by your major courses. Otherwise, be sure to take upper-level courses in math and science that support your engineering interests.

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) of humanities and social sciences (foreign language courses may be counted).

### ***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 is 24.5 courses: at least nine in mathematics and natural science (counting the prerequisites) and at least 13.5 in engineering sciences (the 0.5 credit is provided by the computer science prerequisite). Details are available at <http://engineering.dartmouth.edu/academics/undergraduate/be/requirements/>.

### ***Schedule***

Two schedules are available. Most students take the 2-1-1-1. Ask your dean or advisor which one your school follows.

	2-1-1-1 SCHEDULE	3-2 SCHEDULE
First and second years	Home: prerequisites	Home: prerequisites
Junior	Dartmouth: engineering	Home: upper level science
Senior	Home: upper level science	Dartmouth & Thayer School: engineering
Bachelor of Engineering	Thayer School: engineering	

Your first year may begin in the summer, fall or winter term—*e.g.*, a summer-fall-winter, summer-winter-spring, fall-winter-spring, or winter-spring-summer enrollment plan. The second year enrollment pattern is fall-winter-spring. Consult the sample programs <http://engineering.dartmouth.edu/images/uploads/dual-degree-sample-programs.pdf> to determine which plans best fit your interests. Following your first year, you may pursue an industrial internship. Contact the Thayer School Career Services Office for more information about internship opportunities.

### ***Costs, Housing, Financial Aid***

Dartmouth tuition, fees, room and board, books and miscellaneous costs for the 2015-2016 academic year are \$67,044. Students may also be required to purchase health insurance, which costs \$2,645 for 2015-2016. Expect these costs to be higher in 2016-2017. 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.* Need-based financial aid is available from Thayer School for the second year, up to a maximum of full tuition. 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.

### ***To Apply***

To apply to the dual-degree program, you need to do three things:

- Obtain approval from your college. Consult with your dean or academic advisor regarding the acceptability of Dartmouth courses toward your degree requirements.
- **International students:** See the attached addendum which explains several issues affecting international applicants to the program.
- Obtain an application form from the dual-degree or twelve-college exchange advisor at your college. You can also telephone Thayer School of Engineering at 603-646-3677, send an electronic request to: [ugengg@dartmouth.edu](mailto:ugengg@dartmouth.edu), or download the PDF file found on our website at:

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

- Complete the application and return it to the following address as soon as your fall semester grades are available, and no later than February 1st of your sophomore year (for the 2-1-1-1 schedule) or junior year (for the 3-2 schedule).

Dual Degree Program  
 Attn: Jenna Wheeler, Undergraduate Programs Administrator  
 Thayer School of Engineering at Dartmouth  
 14 Engineering Drive  
 Hanover, NH 03755-8000

You will normally be notified of the admission decision by March 15. Sometimes we request midterm grades for the spring semester, which will delay the decision to mid-April. In recent years we have had many more applications than places in the program. In this case, some students may be placed on a waiting list for reconsideration if space becomes available.