Access and Accessibility

Assistive Listening Devices (ALDs) available

Restrooms: Outside in Lobby – exit back doors and to the RIGHT

All Gender Restroom: exit back doors, go RIGHT, through the glass door,
& down the hallway

Need a break? Take one!

Alternative Format: New.Student.Orientation@Dartmouth.edu

More information: http://dartgo.org/access
Getting Started in Math, Engineering, and the Sciences

Some beginning advice...
• **Department Representatives**
  • Mathematics – Prof. Erik van Erp
  • Biology – Prof. Lee Witters
  • Earth Sciences – Prof. Leslie Sonder
  • Chemistry – Prof. Mike Ragusa
  • Neuroscience – Prof. Matt van der Meer
  • Computer Science – Prof. Soroush Vosoughi
  • Physics/Astronomy – Prof. Ryan Hickox
  • Teaching Science Fellows – Prof. Lee Witters
    • Tanner Riley, ‘22
    • Christopher Huang, ‘22
    • Frankie Carr, ‘22
  • Engineering – Prof. Petra Bonfert-Taylor and Prof. Sol Diamond
This Session

This session is designed to give you introductory information about beginning the college-level study of Math and the Sciences at Dartmouth College

Goals:

• To introduce you to the Math and Science Curricula at Dartmouth
• For you to assess high school preparation in Math and Science and to determine what that might mean for starting Math and Science course sequencing at Dartmouth
• For you to understand the best way to begin course work in individual disciplines (departments/majors)
• For you to understand the relationship between courses in different disciplines (departments/majors)
Overall info/advice

• Know where you’re starting (i.e., placements in math, sciences, etc.,) and your strengths

• College courses are not the same as high school (in terms of pace, difficulty, and grade scale)

• Successful students use resources available to them!

• Your current comfort and mastery in math has implications for how you begin study in the sciences
Know where you’re starting

This has implications for:

- How easy or difficult your transition to college-level science coursework will be
- What classes you take your first term
- What classes you take your first year
- Whether you take certain classes in combination
- Later flexibility for other opportunities (Foreign Study, Off term, etc.)
Is this you?

- Placement into MATH 1 (no calculus experience in High School)
- No AP courses in Math or Science
- Concern about Math/Science preparation
- Less than 700 on the SAT I Math Test
Or, is this you?

- Placement into MATH 3 (some calculus experience in High School)
- You took AP Science course in High School but did not get a 5 on the AP (or didn’t take it)
- No “credit-on-entrance” in science courses on placement record
Or, is this you?

- Placement into MATH 8 or higher
- You got a 5 on one or more AP exams: Biology, Physics, Chemistry
- One or more “credit-on-entrance” in science on placement record
- Score of 22-30 on the Biology Placement/Advisory test
- Confidence/a strong background in science
Take a minute and decide

**Little or no math and science background**
- Placement into MATH 1 (no calculus experience in High School)
- No AP courses in Math or Science
- Concern about Math/Science preparation
- Less than 700 on the SAT I Math Test

**Some math and science background**
- Placement into MATH 3 (some calculus experience in High School)
- You took AP Science course in High School but did not get a 5 on the AP (or didn’t take it)
- No advanced placement in science courses on placement record

**A great deal of math and science background**
- Placement into MATH 8 or higher
- You got a 5 on one or more AP exams: Biology, Physics, Chemistry
- One or more “credit-on-entrance” in science on placement record
- Score of 22-30 on the Biology Placement/Advisory Test
- Confidence/a strong background in science
Avoid doubling up in the Sciences, Math, Physics, or Engineering classes in any term during your first year (there are exceptions to this, e.g. in Engineering sequences; consult with departments and your advisors)

Two courses with labs in one term is always a heavy workload. Avoid taking two lab courses in the same term during your first year

You will likely adjust to college level work at a pace that will allow for success in your first year

You will have less flexibility in your D-Plan (i.e., schedule) particularly later years

Off-campus programs (LSAs and FSPs) are possible but require careful early planning of your schedule

You will have room for fewer electives

If you are Pre-health, you can still complete the Pre-health curriculum before you leave Dartmouth. The norm at Dartmouth and nationwide is to take a year off between college and medical school. This enables you to plan a more flexible schedule for completing the Pre-health curriculum before you leave Dartmouth.

You should limit your extracurricular activities during the first year (this includes internships and academic opportunities outside the classroom)
Implications for some math and science background

• Be cautious in doubling up Science, Math, or Engineering in the first term
• Avoid having your first lab course be during a term where you are taking two such courses
• Pay careful attention to your schedule as you go forward. You can do Foreign Study, etc., but it requires advance planning
• You should limit your extracurricular activities for the first year
• This allows you to apply to medical school in your final year at Dartmouth
A great deal of math and science background

- You will have more flexibility down the road (But don’t squander this)
- It will be easier to fulfill a second major in addition to your science major (if you so choose)
- You should be able to fulfill the prerequisites for your science major in your first year
- It is probably fine to double up on Math and Science courses in the first term
- You may consider taking two courses with labs in the first term
- You may be taking intermediate level math/sciences courses in your first year
Some general advice (College is not the same as high school!)

• Course work will go faster than you anticipate (keep up with notes and problems; this will start in the first week).

• Schedule 3 hours of study and prep time out of class for every hour you spend in class (i.e., you will need a minimum of 30 hours a week outside of class to keep up).

• As you adjust to college work, you will need to learn how to study. This takes time.

• Don’t be surprised if your first exam grade is less than 70%. This could very well be a respectable grade (depending on the curve/course etc.).

• Limit extracurricular activities. Especially until you have college academics under your belt.
Successful students use resources.

• Professors’ Office Hours
• Math Department – drop-in tutorials
• Biology and Chemistry – use the Teaching Science Fellows
• Computer science - take advantage of section leaders and TAs in COSC 1 and COSC 10
• Academic Skills Center
  • 1:1 academic coaching, learning strategies online resources, E-Guide to academic success
  • Peer Tutoring Program—group tutoring for most introductory/foundational courses
    Visit dartgo.org/asc for more details
• Form your own study group
• Engineering: Dartmouth Emerging Engineers (DEE).  FREE study sessions five nights a week at Thayer to help with pre-requisites. Empathetic TA’s, engineering faculty advising, a community of engineering students. https://engineering.dartmouth.edu/dee/
Teaching Science Fellows

Office: 123 Life Sciences Center

Fall term covering BIO 12 & 19 and CHEM 5, but available to any science student

Tanner Riley ’22
Biology

Christopher Huang ’22
Chemistry

E-mail us for help/advice!

Frank.K.Carr@dartmouth.edu
Christopher.Huang@dartmouth.edu
Tanner.G.Riley@dartmouth.edu

Frankie Carr ’22
Biology & Chemistry
FYSEP Liaison

Link to our web site learning resources & appointment calendars

[QR Code]
Teaching Science Fellows Website

http://sites.dartmouth.edu/teachingsciencefellows

OR Google: Dartmouth Teaching Sciences Fellows

It’s the first thing that pops up!
Check out our Study Strategies including videos of study tips!
Mathematics

Math is not only a major, but math classes are pre-requisites for STEM majors, so starting at the correct place is critical.

Little or no math and science background
• If you’ve never taken calculus, take MATH 1 this Fall and MATH 3 in the Winter

Some math and science background
• If you’ve taken some calculus but do not place out of MATH 3, take MATH 3 this Fall

A great deal of math and science background
• You are placed into MATH 8 or higher
• Depending on what you think you might want to major in, take more Math in the Fall or Winter
• If you are considering majoring in Math, take a Math class Fall term
Biology

Little or no math and science background

• If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter
• Consider taking BIO 11 in the Winter or Spring
• Consider taking BIO 2 (Human Biology) this Fall (last offering)

Some math and science background

• If placed into MATH 3, take MATH 3 this Fall
• Take BIO 11 sometime this year; consider a foundation course (BIO 12-16)
• Consider taking CHEM 5 in the Winter

A great deal of math and science background

• Take Biology 19 in the Fall or a foundation course (12-16) in the Fall or Winter (BIO 12-16); consider taking a second foundation course this year
• Consider taking CHEM 5 (Fall or Winter) and CHEM 6 (Spring) this year
Chemistry

Little or no math and science background
• If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter
• Take CHEM 5 in the Winter, CHEM 6 in the Spring

Some math and science background
• If placed into MATH 3, take MATH 3 this Fall
• Depending on your chemistry placement, either take CHEM 11 in the Fall or Spring (new offering), or take CHEM 5 in the Winter, CHEM 6 in the Spring. Both allow you to take organic chemistry sophomore year.
• Consider taking CHEM 5 in the Fall, if you have credit for MATH 3

A great deal of math and science background
• Take CHEM 11 in the Fall or Spring (new offering)
• If you have credit on entrance for CHEM 5 and CHEM 6, consider taking organic chemistry (in consultation with the Department)

Chem 5 prep site: https://canvas.dartmouth.edu/courses/53399
Students wishing to devote one course to the study of Computer Science should take COSC 1 offered in Fall, Winter, and Spring. No previous programming experience is required to take COSC 1 (over half of students taking COSC 1 have no computer programming experience). Students wishing to devote two or more courses to the study of Computer Science should begin with COSC 1 and COSC 10. Students wishing to take courses in Digital Arts should start by taking COSC 1 or COSC 2. ENGS 20 may substitute for COSC 1 in any program of study.

**Little or no math and science background**

- If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter

**Some math and science background**

- If placed into MATH 3, take MATH 3 this Fall

**Please note:**
- COSC 1 is a prerequisite for COSC 10
Prerequisites: Any one introductory Earth Science course (EARS 1-9 exclusive of EARS 7); EARS 40; CHEM 5 (or CHEM 10); and any one of the following courses taken at Dartmouth: MATH 3, MATH 8, MATH 9, MATH 11, MATH 12, MATH 13, MATH 14, MATH 23, or MATH 46.

**Little or no math and science background**

- If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter
- EARS 1 the Fall or Spring

**Some math and science background**

- If placed into MATH 3, take MATH 3 this Fall
- EARS 1 in Fall or Spring or EARS 18 in the Fall

**A great deal of math and science background**

- EARS 1 in Fall or Spring or EARS 18 in the Fall
- CHEM 5 in the Winter
**Engineering**

**Little or no math and science background**
- If placed into MATH 1, take MATH 1 this fall, MATH 3 - winter, MATH 8 - spring.
- First year: develop confidence in mathematics and work with a faculty advisor
- MATH 13, PHYS 13, PHYS 14, and ENGS 20 in the second year, begin engineering core courses during sophomore summer.

**Some math and science background**
- MATH 3 this fall, MATH 8 in the winter.
- PHYS 13 in the winter, PHYS 14 in the spring. MATH 13 or ENGS 20 or ENGS 21 in spring
- Plan to complete math and physics, plus ENGS 20 and 21, by the end of sophomore year, to begin taking engineering core courses during sophomore summer.
- CHEM 5 can wait until later.

**A great deal of math and science background**
- Take MATH 8 +13 or 11 in fall/winter, with PHYS 13 +14 in fall/winter or winter/spring.
- Take ENGS 20 or 21 in the Spring, the other during sophomore Fall. Talk to your engineering advisor about planning the second year.
- CHEM 5 can be taken first year, sophomore year, or wait until later

**Biomedical Engineering and/or Pre-Health**
- Follow math guidance above and consult with an engineering advisor
- Take CHEM 5/6 as soon as reasonable
- Begin Biology sequence (11/12) if schedule allows
- Take PHYS 13/14 in sophomore year
Physics and Astronomy

**Little or no math and science background**
- If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter (start with PHYS 13 Sophomore Fall)
  - Note: PHYS 3 & 4 are for non-majors (don’t start here if you want to major)

**Some math and science background**
- If placed into MATH 3, take MATH 3 this Fall, AND take MATH 8 in the Winter
- Take PHYS 13 in the Winter, PHYS 14 in the Spring
- Students placing into MATH 11 or MATH 9 should consider MATH 9 or speak with a faculty member during the Math Open House.

**A great deal of math and science background**
- Take Physics 13, 14, 19 in the first year (or postpone 19 until Sophomore Fall)
  OR
- Take 15/16/40 in the first year (the accelerated track)
  - Note: PHYS 15 is offered Fall/Winter and PHYS 16 is offered Winter/Spring; PHYS 40 offered Fall/Spring
  - Note: PHYS 15 requires that your high school physics used calculus and requires taking an on-line placement exam during orientation

Note for Premeds: PHYS 3 is now offered Summer/Fall/Winter and PHYS 4 Winter/Spring
Neuroscience

Prerequisites: PSYC 6, PSYC 10; two courses from among MATH 3, 4, 8, ENGS 20, COSC 1, 10; and two courses from among CHEM 5, 6, PHYS 3, 4

**Little or no math and science background**

- If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter
- Take PSYC 6 in Winter or next (sophomore) Fall

**Some math and science background**

- If placed into MATH 3, take MATH 3 this Fall
- If taking MATH 3 or another STEM course in Fall, take PSYC 6 in Winter or next (sophomore) Fall

**A great deal of math and science background**

- Take PSYC 6 Fall (if no other STEM courses) or Winter term
Prerequisites: PSYC 6 & PSYC 10, plus four courses from the following: MATH 3, 4, 8; ENGS 20; COSC 1, 10, 31; CHEM 5, 6; PHYS 3, 4 (must have at least one CHEM/PHYS course; see PBS website for details)

Little or no math and science background

• If placed into MATH 1, take MATH 1 this Fall and MATH 3 in the Winter
• Take PSYC 6 (Intro to Neuroscience) in Winter or sophomore Fall

Some math and science background

• If placed into MATH 3, take MATH 3 this Fall
• If taking MATH 3 or another STEM course in Fall, take PSYC 6 in Winter or sophomore Fall

A great deal of math and science background

• Take PSYC 6 Fall (if no other STEM courses) or Winter term
Breakout Rooms

- Mathematics – Courtyard Café near the Hood Museum entrance
- Biology – Russo Atrium (Hood Museum of Art foyer)
- Earth Sciences – Bentley Lobby (outside Moore Theater)
- Chemistry – Moore Theater
- Neuroscience – Outside Courtyard Café
- Computer Science – Courtyard Café near Hinman
- Physics/Astronomy – Faculty Lounge (Top of the Hop, near Alumni Hall)
- Engineering – Top of the Hop