

# Some Notes for New Computer Science Graduate Students

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Each year, when we gave the new student orientation, I felt as if I was bombarding the new students with massive amounts of detail they cannot possibly remember. Eventually, I figured I'd write it down—hence this document.

**Caveat:** With the COVID-19 pandemic, many aspects of Dartmouth life are disrupted and in flux. This document does not aspire to record the latest pandemic-related policies—check the Guarini page at

- <https://graduate.dartmouth.edu/about/who-we-are/covid-19-guarini-updates>.

(And stay safe!)

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# 1 Academic Culture

## 1.1 Plagiarism and the Honor Code

Dartmouth takes academic integrity very seriously. In your written work, it is *critical* that

1. you cite all sources;
2. and if you've borrowed text from a source, make sure you typeset it as a quote (and then cite it)

These rules apply not just to work written for scientific publications, but also to anything written as a requirement for your degree (e.g. 1st year reports for PhD students) or courses.

We occasionally encounter new students with incorrect beliefs such as:

- *False*: “As long as you list the paper in your bibliography, you are free to cut and paste from it.”
- *False*: “If it's from *Wikipedia*, you are free to cut and paste from it.”
- *False*: “If it's from the professor's own work, then he or she will be flattered if you cut and paste from it.”

**Do not do any of this.** You can get into serious trouble, such as being suspended for a number of terms (which can then have visa implications for international students).

**REREAD THE PREVIOUS PARAGRAPH AND ASK ME IF YOU HAVE ANY  
QUESTIONS. THIS IS A SERIOUS MATTER.**

The only exception to the “no borrowing text” rule is if you are borrowing from your *own* prior publication—and even then, you need to make it very clear that's what you are doing, and get approval from the professor/editor/whomever you are writing for (since different venues have different standards about this).

**Desperate?** If you feel you are “in over your head” and fear failing a course, it is far better to talk to the professor involved—and/or to your Program Director—then to engage in academic misbehavior (such as copying solutions from another student or from somewhere on the Web, and then representing them as your own).

## 1.2 The Dartmouth Term

Dartmouth's “term” system often comes as a surprise to new students (and new faculty). We do in 10 weeks what other universities do in a full semester, and have three terms (Fall, Winter, Spring) during the regular academic year. There is also a Summer term, but not much happens then relevant to grad students (except for research); many grad students go away on internships.

On your end, you only take three courses at a time (instead of four or five)—but *things move quickly*. If you get behind, it can be very hard to get caught up again. Time management is very important.

One alum notes that, perhaps because of the Dartmouth term system, the college “doesn't do most of the holidays that other [US] schools do, so classes are held on Columbus Day, President's Day, etc.”

Starting with Fall 2012, the college has adjusted its fall term schedule to start earlier in September and then finish before Thanksgiving (that's a US-based harvest-themed holiday in late November).

You may also hear people refer to the long break between fall and winter terms as *winterim*.

### 1.3 Finding things out at Dartmouth

Throughout your time at Dartmouth, you will have many questions. Often, the answers can be found online. Developing good search skills is important (particularly in our line of work). Some good places to start:

- the department: <https://www.cs.dartmouth.edu>
- the Guarini school (our “Graduate Office”): <https://graduate.dartmouth.edu>
- the Registrar: <https://www.dartmouth.edu/~reg/>
- the College homepage: <https://www.dartmouth.edu>
- the ORC (Dartmouth’s equivalent of “catalog”): <https://dartmouth.smartcatalogiq.com/en/current/orc>
- OVIS, the international office: <https://ovis-intl.dartmouth.edu/>
- Banner, the general portal to many Dartmouth services: <https://www.dartmouth.edu/bannerstudent/>

### 1.4 Library

The Dartmouth library has many useful CS resources and journals available online—but, due to authentication magic, you usually have to come in through the library site or via VPN (see Section 2.4 below), rather than directly.

The Feldberg branch of the library is located in the Murdough Center, right behind the Irving Institute. Feldbergsupports business, engineering, and computer science and is a nice place to study as well as a place to get research help. For more information, contact our friendly library liaison, [matt.benzing@Dartmouth.edu](mailto:matt.benzing@Dartmouth.edu).

Also, a student commented:

The library will help you when performing the literature review portion of your thesis; they can help track down papers and find related work in databases you likely don’t even know exist... really wish I’d known about that 2.5 years ago.

### 1.5 Lingo

Dartmouth folks may tend to use specialized codewords whose meaning may not be apparent to a newcomer. Some common ones:

- *The New Building*: our new building, into which we moved in March 2022. AKA “ECSC,” “Engineering and Computer Science Center,” and “Class of 1982.”
- *CECS*: the original acronym for our new building (“Center for...”); you’ll still see this around.
- *Sudikoff*: the building that formerly housed the department.
- *Guarini*: the name for the organizational unit at Dartmouth governing graduate studies.
- *OVIS*: Dartmouth’s “Office of Visa and Immigration Services”
- *Banner*: an online portal by which students and faculty access many Dartmouth services.
- *The Upper Valley*: the region of Vermont and New Hampshire in which Dartmouth is located.
- *ITC, or IT&C*: the current name for the computing services group at Dartmouth.
- *Kiewit*: the old name for the computing services group at Dartmouth

- *Thayer*: the engineering school
- *Tuck*: the business school
- *Irving*: the Energy Institute, near CS and Thayer and Tuck
- *FoCo*: slang for the Class of 1953 Commons, a Dartmouth cafeteria
- *Geisel*: the medical school (named after the alumnus better known as “Dr Seuss”)
- *DMS*: Dartmouth Medical School (the old name for Geisel)
- *Dick’s House*: the infirmary at Dartmouth
- *DHMC*: Dartmouth-Hitchcock Medical Center (giant hospital nearby that does tertiary-care, research, and teaching)
- *APD*: Alice Peck Day, a smaller hospital nearby (affiliated with DHMC)
- *ORC*: the Dartmouth course catalog (<https://dartmouth.smartcatalogiq.com/en/current/orc>)
- *LSC*: the Life Sciences Center, a building on the northwest end of campus (with nice classrooms sometimes used by COSC courses)
- *DALI*: the Dartmouth Applied Learning and Innovation lab
- *ISTS*: the Institute for Security, Technology, and Society
- *Neukom*: the Neukom Institute for Computational Science
- *blitz*: email

## 1.6 “College”

Generally, people accustomed to using “college” to mean “undergraduate only” and “university” to mean “a college with graduate programs too” are surprised that we are Dartmouth *College*.

Yes, we do indeed have graduate programs—MS and PhD (primarily in science and engineering), as well as business and medical schools. However, it’s called Dartmouth *College* because of a legal squabble in the early 1800s (and New Englanders tend to have long memories).

- <https://250.dartmouth.edu/highlights/dartmouth-college-case-decided-us-supreme-court>

## 2 Electronic Culture

### 2.1 You're Arriving in Interesting Times!

For decades, Computer Science was housed in Sudikoff, with our own sysadmin staff, machine room, mailserver, webserver, fleets of machines, NFS, etc.

However, in 2020-21, our sysadmin retired, the mailserver was retired, and the rest of the infrastructure transitioned to Thayer Computing Services; in March of 2022, we moved into a new building shared with Thayer. (I haven't yet finished unpacking my office.)

### 2.2 E-Mail

Dartmouth does much of its business by email.

You should already have your main Dartmouth account (e.g., `Sean.W.Smith@dartmouth.edu`) (which is also occasionally reached via your “NetID” (see below)). One student notes “you can obtain email aliases through the Dartmouth Directory Manager, and that these are useful for providing email addresses to sites that may send you unwanted messages.”

You may also receive other Dartmouth accounts.

Make sure you monitor your main Dartmouth account. If you have other Dartmouth accounts, I recommend monitoring them as well (e.g., by having everything forward to the same place).

Check your email regularly. (Many times daily.) Be sure you can handle things such as attachments. Figure out how to organize your mail so that important things don't get lost.

The Dartmouth-wide email system has its roots in the then-pioneering *Blitzmail* system built here back in the 1980s. Because of that origin, you will hear people use the term “blitz” for e-mail (both as a noun and a verb).

**Looking Up Dartmouth Email Addresses** <https://lookup.dartmouth.edu/>

### 2.3 Authentication

You will likely end up with several forms of authentication<sup>1</sup> in our systems.

- As of Fall 2012, Dartmouth IT rolled out a new “NetID” system—basically, a complicated username based on your college ID number, and a complicated password. This has become the standard way to authenticate to a large number of internal college-level services (such as Banner), as well as to all Thayer systems.
  - <https://services.dartmouth.edu/TDClient/KB/ArticleDet?ID=64942>
  - <https://myaccount.dartmouth.edu/telluswhoyouare>

As your NetID password is the “key” to your Dartmouth identity, we recommend that you pick a long and random one, and keep it secret. The effective maximum password length for NetID is 24 characters (as some of the SSO middleware will truncate after that).

As of 2019, IT phased in *Duo*, a two-factor authentication system for systems protected by NetID. You'll probably have to use this everywhere.

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<sup>1</sup>We used to have a Dartmouth-wide PKI, which would let you access the Dartmouth Secure WLAN and transparently access restricted Web sites (such as Banner) without ever typing your password. Since using passwords for remote machines is generally not a good idea (because it requires giving away your secret each time you use it), this was really nice, and Dartmouth was a leader here. Unfortunately, it was phased out.

- <https://kb.thayer.dartmouth.edu/article/442-duo-two-factor-authentication>

Many people use their cellphone as the second factor; however, you can also obtain a special Duo token from the Dartmouth Computer Store. (Rumor says this is free.)

- You may have a userid and password on various specialized systems.
- If you need to connect often to specialized machines, you can sometimes set yourself up with SSH keys and “SSH Agent,” so you can seldom need a password.

**Password Managers** If you’re like most computer users, you’ll end up with a plethora of userid/password pairs—and each password is supposed to be long, hard-to-memorize, and unique. To be a responsible computing citizen, it would be good to explore using a password manager. Many in the department use Mac’s Keychain Access; I like <https://1password.com/>.

## 2.4 Networks

You should be aware that Dartmouth has two different views of its computer networks:

- “Outside” (e.g., from off-campus, or from the “Dartmouth Public” WiFi)
- “Inside” (e.g., from a computer plugged into a Dartmouth LAN or connected to the “Eduroam” WiFi, or tunneled in from outside via VPN)

Many online resources are restricted to “insider” access only—so it would be good (before classes start) to figure out how to do this.

Some possibly useful links:

- Eduroam: <https://services.dartmouth.edu/TDClient/KB/ArticleDet?ID=64684>
- VPN: <https://services.dartmouth.edu/TDClient/KB/ArticleDet?ID=66806>

Eduroam credentials also let you easily connect to internal WiFi when you visit other universities. However, if you are coming from other institutions which used eduroam, you will need to follow the IT&C eduroam instructions to “re-connect” to eduroam to really be in the “inside” Dartmouth space. Check:

- <https://services.dartmouth.edu/TDClient/1806/Portal/KB/ArticleDet?ID=106582>

## 2.5 Connecting to Machines

In ancient times (when you could still trust everyone on the net), `telnet` was the standard tool for connecting for your client machine to a remote machine, and `ftp` was the standard tool for moving files. However, these tools have significant security flaws:

- they send userid and password information in plaintext
- the rest of the data is also sent in plaintext
- there was no authentication that the machine at the other end is the machine you thought it was

As a consequence, “best practice” has now shifted to `ssh` for connecting, and `sftp` or `scp` for transferring files.

It would be good to learn to use these tools (particularly since, due to the security concerns, many machines at Dartmouth no longer support `telnet/ftp`).

However, for these tools to work, your client machine needs to know the public key of the remote machine before establishing the cryptographic tunnel. If not, you may first see a warning like this:

```
The authenticity of host ***** can't be established.  
RSA key fingerprint is *****.  
Are you sure you want to continue connecting (yes/no)?
```

On the one hand, maybe this is benign—the remote machine really is the one you wanted, but your client didn't know its public key (or its public key has changed). On the other hand, maybe you're connecting to an evil machine pretending to be your target, perhaps as a “man in the middle.”

In the common state of practice, your client machine will look in a file `~/.ssh/known_hosts` for this information. On many maintained systems (including the Thayer Linux servers), you can find a current list of local, machines and public key fingerprints at `/etc/ssh/ssh_known_hosts`. If you're going to `ssh` or `scp` to such a machine from, say, a personal laptop, make sure you first populate your laptop's `known_hosts` from a trusted source.

## 2.6 Operating Systems

People in the department use a mix of Linux, Mac, and Windows systems (as well as a few specialty ones). As a computer scientist, you should be comfortable using Linux and at least one of Mac or Windows, no matter what your “home” machine is.

## 2.7 Document Production

If you don't know it already, it would be good to learn how to produce documents with LaTeX, which is the standard (in CS and math) for professional typesetting. (I've been on program committees where harsher reviewers laughed at papers submitted in Word.) See also:

- [https://researchguides.dartmouth.edu/LaTeX\\_BibTeX/overleaf](https://researchguides.dartmouth.edu/LaTeX_BibTeX/overleaf)

It would also be good to get comfortable producing technical drawings in a vector-graphics format (as opposed to bitmapped format).

## 2.8 Buying Computers

Dartmouth subsidizes a computer store, located in the basement of McNutt Hall.

- <https://computerstore.dartmouth.edu/>

## 2.9 Personal Websites

For general information on ways to set up personal websites at Dartmouth, see:

- <https://kb.thayer.dartmouth.edu/article/281-website>

As longer-term residents, faculty and PhD students may set up pages at the Departmental site, <https://www.cs.dartmouth.edu>. Contact <https://services.dartmouth.edu/>



## 2.10 Thayer Linux Servers

Thayer Computing Services maintains a suite of Linux servers:

- <https://kb.thayer.dartmouth.edu/article/361-linux-services>

Note that the machines are scheduled to be upgraded to a new version of Ubuntu before Fall 2022 term.

All COSC grad students are eligible for accounts; any student enrolled in a COSC class > 10 will be given one automatically. (But if you have any questions, contact [computing@thayer.dartmouth.edu](mailto:computing@thayer.dartmouth.edu).)

Connecting to a Thayer Linux server requires that you:

- be “inside” the Dartmouth IP space (e.g., via VPN)
- and `ssh/scp` with your NetID and Dartmouth-wide password.

For infrastructural reasons, the Thayer machines do not allow you to set up an ssh keypair.

### 2.10.1 FastX

If you would prefer a full virtual desktop, see <https://kb.thayer.dartmouth.edu/article/435-fastx> (which also seamlessly integrates with a browser-based password manager). I recommend the “XFCE” option.

The “Fast X file manager” tool (in the pull-down menu at the center top of the screen) allows you to move files back and forth between the Thayer system and your client.



### 2.10.2 Kerberos Games

One workaround to the lack of client-side PKI support in Thayer SSH is to use `kinit` on your client machine to set up a temporary Kerberos TGT for Thayer services. E.g.:

- Connect your client machine to the VPN.
- Get a 2-day TGT with
  - `kinit -r 7d -l 48h -f (your NetID)@KIEWIT.DARTMOUTH.EDU`

This requires entering your master password (or bringing it over from your password manager, which is what I do).

- Then, for the lifetime of the ticket, you can `ssh -K` and `scp` to the Thayer machines without typing a password.

(From OSX, the TGT is not renewable, due to messy OSX issues.)

You could take the additional step of setting up a `keytab` file with a one-way transformation of your master password, and having `kinit` go there. However, Thayer Computing does not recommend this route—having a `keytab` on your local machine is just an obfuscated plaintext password; in theory, recovering the plaintext should be cryptographically hard, but one never knows.

### 2.10.3 Computing Labs

Thayer also maintains a few rooms of Intel-based dual-boot machines that can boot into Linux. These are currently in flux; ask me (or Thayer) in October.

## 2.11 For More Information

For general Dartmouth IT issues:

- <https://services.dartmouth.edu/>

For Thayer Computing Services issues:

- <https://computing.thayer.dartmouth.edu/>
- <https://kb.thayer.dartmouth.edu/article/252-introduction-to-computing-services>
- <https://kb.thayer.dartmouth.edu/article/361-linux-services>
- [computing@thayer.dartmouth.edu](mailto:computing@thayer.dartmouth.edu)

## 3 Our Graduate Programs

Our department has three graduate programs:

- the PhD program
- the MSCS program
- the Digital Arts MS program (MSDA)

The MSCS and the PhD programs are separate, in that students start out in one or in the other. (At some other universities, everyone starts out in the MS.) The PhD program has stricter admission requirements, as the college puts a strict limit on the number of PhD students we may admit, and that the PhD program places a stronger emphasis on independent, long-term research.

However, once admitted, all the grad students (as well as upper-level undergrads) tend to take the same classes, work in the same labs, go to the same talks and social events, etc.

### 3.1 PhD Qualifiers, etc

“Qualifying exams” used to be a standard (and often feared) part of many PhD programs. Our program no longer has them. However, our PhD program does require a *first-year paper* (beginning of your second year) and the *Research Presentation Exam (RPE)* (by the end of your third year). See items 3 and 6 in “Requirements for the Doctor’s Degree (Ph.D.)” at

- <https://dartmouth.smartcatalogiq.com/en/current/orc/Departments-Programs-Graduate/Computer-Science>

Note that the online ORC is only updated once a year, and so might not reflect the latest changes. If in doubt, ask your program director.

### 3.2 The Digital Arts MS (MSDA)

The MS program in CS with a Concentration in Digital Arts (MSDA) program has two flavors:

- The accelerated 4+1 MSDA program for students who were Dartmouth undergraduates in the last two years.
- The regular, two-year MSDA program

All MSDA students are expected to take courses and conduct research, with 50% of the time in the program spent on coursework and 50% spent on research. Students are expected to familiarize themselves with the ORC and the requirements for graduation.

The MSDA Faculty Director is Professor Lorie Loeb. You are expected to meet with Professor Loeb before classes begin and at least twice per term. It is recommended that students start to find a research advisor before the midway point in the program.

### 3.3 The Regular MS Program (MSCS)

The regular MSCS program has two tracks: coursework and thesis.

All students start out in the coursework track, and may petition to transfer over to the thesis track. If you’re interested in the thesis track, I recommend taking the following steps:

- Find a professor whose research interests you.
- Arrange to do a research credit with them.
- During the credit, figure out if research is something you really want to do, and...
- ...work really hard and impress the professor so that she/he will enthusiastically support your move into the thesis track.

As with MSDA, the MSCS program has a 4+1 option.

### 3.4 Transferring from MSCS to PhD

It is possible for students in our MSCS program to transfer to the PhD program. (If you want to do this, then excel in your courses and impress faculty! If you're in the coursework track, consider ways to demonstrate your research potential.)

In order to transfer, you have to apply to the PhD program the same as anyone else. If admitted, you may draw upon the non-research courses taken for your Dartmouth CS MS degree to fulfill PhD requirements.

### 3.5 Transferring from PhD to MSCS

It is possible for PhD students to apply to transfer to the MSCS program, but there are no guarantees. We will consider each application on a case-by-case basis. To help illustrate the situation, here are two hypothetical scenarios:

- 4th-year PhD student A worked very hard, excelled at all courses, passed the RPE and has done excellent research. However, due to some sudden changes in A's personal life, A is not able to stay to finish the PhD. A is likely to be granted admission to the MSCS program, with a tuition waiver.
- 1st-year PhD student B has poor grades and has not done well at research. B is not likely to be granted admission to the MSCS program. Even if B were granted admission (say, if B's grades had been better), B still would likely be charged full tuition.

## 4 Courses

Students take 3 credits a term.

Typically, one course is one credit (although many students may end up taking multiple research credits in a term, but still part of the three credits).

If you do the arithmetic, you may discover you will have far more slots for courses during your stay at Dartmouth than you have degree requirements. Thus, not every course you take needs to “count” for your degree. (And indeed, we expect that many students may end up taking additional courses as well as pre-requisite courses.) See Section 4.2.2 below.

We do not recommend taking four courses in one term—talk to your program director to if you’re thinking of trying that. Note also that Guarini has a rule: if a student is taking four courses a term, at most one of those can be a research credit.

### 4.1 Quick Guide to COSC Courses

#### General Courses

- **COSC01-COSC99:** undergraduate courses.
- **COSC120-COSC129:** Digital Arts courses.
- **COSC149-COSC191:** graduate courses which count for MSCS degree credit, and general PhD degree credit.
- **COSC232-COSC289:** graduate courses which count for MSCS degree credit, and PhD “breadth” degree credit.

COSC149/249, 169/269, and 189/289 are “special topics” seminars. They usually are different each time they’re offered; you get credit for each different instance you take.

#### Special Graduate Courses

- **COSC294:** a reading course, for topics not otherwise covered
- **COSC296:** when a PhD student is a TA
- **COSC297-COSC299:** research courses; respectively, 1, 2 and 3 credits

#### Anomalous Special Cases

- **COSC200:** “current topics” course, which does not count for grad degree credit.
- **COSC210:** colloquium placeholder course; no credit
- **COSC295:** For summer internships; no degree credit
- **COSC700:** ethics course required for all graduate students but which does not count for degree credit. Only meets about 6 times.

**Pre-Requisites** Our departmental web site has a directed acyclic graph showing the general pre-requisite chain:

- <https://web.cs.dartmouth.edu/undergraduate/undergraduate-courses>

Some upper-level undergraduate courses (e.g., COSC62) are cross-listed and co-taught with a graduate version (e.g., COSC162) requiring extra work—hence the appearance of things like “1/62” in the diagram.

## 4.2 More Detail

### 4.2.1 COSC Graduate Courses

The full list:

- <https://dartmouth.smartcatalogiq.com/current/orc/Departments-Programs-Graduate/Computer-Science/COSC-Computer-Science>

**Registering for Graduate Courses other than 294-299** Paraphrasing from a Ph.D. student:

*Log in to Banner:*

- <https://www.dartmouth.edu/bannerstudent/>

*Click on the “Add / Drop Course Selection” link.*

*A few other notes: I think that we grad students need to be registered for a “full” course load in order to be considered full-time (and thus eligible for our health insurance). Shopping for classes is a good idea; you can add or drop them without trouble until the deadline (but DON'T forget to do it before the deadline).*

**Registering for 294-299** Students do not register themselves for 296, the TA course; the department registers the student once the TA assignments are done and the student will be notified via email.

For the others, use our internal app:

- <https://www.cs.dartmouth.edu/~reg/ra/>

Before registering for 294 or a research credit, make sure you have found a professor to agree to advise it.

For 295, talk to your program director.

**COSC700** New grad students are expected take COSC700 during their first fall term.

**COSC210** Our somewhat weekly colloquium often shows up in the system as a zero-credit (and no-grade) course in order to facilitate classroom scheduling. PhD students should register for it; we encourage all graduate students to attend.

(Note that the Registrar occasionally lists 210 has having credit, and then we need to correct that.)

Registered or not, you should attend the colloquia!

### 4.2.2 COSC Undergraduate Courses

The full list:

- <https://dartmouth.smartcatalogiq.com/current/orc/Departments-Programs-Undergraduate/Computer-Science/COSC-Computer-Science-Undergraduate>

**Registering for Undergraduate Courses** A grad student registering for an undergrad course must use the paper form from Guarini. To make things easier during these pandemic times, we've created a version that can be filled out using a PDF reader:

- <https://www.cs.dartmouth.edu/~sws/course-change-form-2020-enhanced.pdf>

In lieu of physical signatures, approvers should email their approval to our department administrator, [Susan.Perry.Cable@dartmouth.edu](mailto:Susan.Perry.Cable@dartmouth.edu).

However, as the pandemic eases, one suspects the college may revert to requiring actual signatures on actual paper.

**Ugrad for MSCS graduate credit** Students in our standard MS program are allowed to take COSC 39, 55, 59, 60, and 61 for graduate credit, within the framework of required courses for their degrees. Students doing so will need to complete additional work beyond that required for the undergrads. (So it's important to tell the professor that you're taking the course "for graduate credit.")

Like any other graduate course, these courses will be graded as graduate courses on your transcript.

**Ugrad courses for PhD graduate credit** Undergraduate courses do not count for PhD credit.

**Ugrad courses not for graduate credit** Again, if you want to take one or more undergrad courses not on the list for your degree program and it makes sense for your education (e.g., to fulfill a pre-requisite requirement), you may still them. Such courses will count toward the three courses necessary for a "full-time load" (which may be important for visa reasons). However, these courses will not count toward your degree; you still need to complete the required degree-credit courses within the allotted time for your program.

However, note that MSCS students need to accrue at least three degree-credit courses in order to earn a non-resident term; see the "Nonresident terms for master's students" policy at:

- <https://web.cs.dartmouth.edu/graduate/expectations-policies-and-procedures>

#### 4.2.3 What courses are being offered this year?

A tentative list: <https://web.cs.dartmouth.edu/undergraduate/upcoming-class-schedule>

#### 4.2.4 COSC Course Renumbering

In Fall 2020, the department renumbered some of its graduate-relevant courses. You may see the old numbers persist in some Web pages for a while.

To help you navigate, here's a summary of the changes:

<b>before Fall 2020</b>	<b>Starting Fall 2020</b>
COSC 57	COSC 57 (ugrads), COSC 257 (grads)
COSC 58	COSC 58 (ugrads), COSC 258 (grads)
COSC 135	COSC 235
COSC 140	COSC 240
COSC 149	COSC 249
COSC 167	COSC 267
COSC 174	COSC 274
COSC 176	COSC 276
COSC 177	COSC 277
COSC 178	COSC 278
COSC 187	COSC 287
COSC 231	COSC 32 (ugrads), COSC 232 (grads)
COSC 258	COSC 68 (ugrads), COSC 268 (grads)
COSC 276	no longer offered
"Advanced topics" courses: COSC 149, 169, 189	"Advanced topics" courses: COSC 149, 169, 189, 249, 269, 289

but note...

If a course is *not* listed in the table above, then the numbering hasn't changed

**Courses Missing from the ORC** Due to the renumbering, one of our older graduate courses is not in the August 2022 ORC.

- **COSC 232**, “Advanced Algorithms” (the former COSC 231)

This course still exists, although will not be offered in the 2022-23 academic year.

**Placement Exams?** The “second-level” graduate courses 232 and 268 require that students either have strong performances in the corresponding undergrad course at Dartmouth, or explicitly demonstrate their preparedness (e.g., via an entrance exam).

As neither course will be offered in 2022-2023, we are not offering the exams this year.

### 4.3 Courses in other Departments

You may also take courses in other departments (Math and Engineering are common choices). However, to count such a course against the requirements for your degree, you must petition our department *first*. (Typically, at most one such course can count for credit, MS or PhD.)

### 4.4 Grades

Graduate courses within our department are graded as follows:

- HP (“high pass”)



- P (“pass”)
- LP (“low pass”)
- NC (“no credit”—that is, failing)

Getting an LP or NC will have ramifications for your academic standing. At most two LPs can be counted for your degree credit; if you receive more than two LPs or more than two NCs, you may be summarily dismissed from the program. For more information, see the graduate handbook:

- <https://graduate.dartmouth.edu/policy/satisfactory-progress>

Note that, although you are only required to earn a “P” in courses, many professors take grades into account when deciding to take new students into their research programs.

Undergraduate COSC courses not taken for graduate credit—as well various courses outside the department—may be graded on a more traditional A-B-C-D-E scale. (Dartmouth uses “E” for failing, rather than “F.”)

Along with a course grade, a professors may also issue a “citation,” to acknowledge exceptional performance. However, these are rarely given.

## 4.5 Class Times and Classrooms

To see when and where a class is being offered, consult:

- <http://oracle-www.dartmouth.edu/dart/groucho/timetable.main>

Dartmouth has a class-period system that occasionally puzzles new students. There are two main patterns:

- Monday-Wednesday-Friday, for 65 minutes
- Tuesday-Thursday, for 110 minutes.

Each course slot also has an *X hour* once a week, to be used for whatever the instructor wants. E.g.:

- More lectures?
- Substituting for a regular class session that needed to be cancelled?
- Ignored entirely?

As of Fall 2022, this general timetable has been revised (again) See:

- [https://www.dartmouth.edu/reg/docs/class\\_schedule\\_22f.pdf](https://www.dartmouth.edu/reg/docs/class_schedule_22f.pdf)

Two examples:

- A course listed for the “10” slot will have class MWF from 10:10-11:15, and an X-hour on Thursday from 12:15-1:05.
- A course listed for the “10A” slot will have class TuTh from 10:10-12:00, and an X-hour on Friday from 3:30-4:20.

## 4.6 Final Exams

In non-pandemic times, courses may have in-class final exams. For these, the Registrar determines the schedule. See:

- <https://www.dartmouth.edu/~reg/calendar/exams/index.html>

A course without an in-class final may have a take-home exam or some kind of final project. The due dates will typically be based on the in-class exam schedule above.

As a consequence:

- At the end of a term, you should not plan on leaving campus until after the date of your last final.
- If you're a TA, you may need to stay even later to help grade; talk with the professor for whom you're TAing.

## 4.7 Transferring Courses

**Transferring Courses from Elsewhere** If a particular course is required for your degree but you believe you have taken the equivalent already somewhere else, talk to the professor involved—the department may approve your taking a substitute course instead. The official policy:

- <https://web.cs.dartmouth.edu/graduate/expectations-policies-and-procedures/transferring-courses-elsewhere-cs-graduate-programs>

**Undergraduate Courses at Dartmouth** Students who have taken suitable courses at Dartmouth as undergraduates may apply to reduce the number of courses required for their MSCS degree—see the above link for the policy. If this option may apply to you, discuss it with the MSCS Program Director.

## 5 Student Life

### 5.1 Being a Computer Science Graduate Student

One professor suggests:

<http://www.cs.unc.edu/~azuma/hitch4.html>: *someone's view of what is important for a PhD in computer science.*

<http://www.joelonsoftware.com/articles/CollegeAdvice.html>: *what is important for a programming job in computer science. It is probably worthwhile to read them both. One thing I find interesting is that they both stress the importance of communication skills.*

<http://www.cs.cmu.edu/~jasonh/advice.html>: *has a whole lot more links in this vein to be read at your convenience and interest. I suggest you start with the third one to see the links here to all sorts of relevant topics.*

### 5.2 Research Habits

Research is a central component of the PhD graduate student experience, and may be central to some MS graduate student experiences as well. Professor Deeparnab Chakrabarty offers some helpful suggestions:

- *Research is not the same as coursework. Most times you will be hitting a brick wall with your head.*
- *Research is hard work. Don't be fooled by the "freedom" you get. Don't confuse research with the "research lifestyle."*
- *Write. You may think you know how to write. Most probably you are wrong. Research involves a lot of writing.*
- *Although different advisors have different styles, it is good practice to be around the department during work hours. Most faculty members do so most of the times.*
- *Be professional. Come to meetings on time. Reply to emails on time. Dress professionally (torn T-shirts and bad hygiene is NOT OK)*
- *Don't vanish from the department for long periods of time without proper approval of your advisor.*

Professor Wojciech Jarosz stresses "make and maintain an academic website" (see Section 2.9) and offers additional suggestions and guidelines at <https://cs.dartmouth.edu/~wjarosz/policies.html>

### 5.3 Departmental Citizenship

As noted elsewhere: we expect our graduate students to attend the somewhat weekly colloquium.

We also expect students to clean up after themselves if they make messes in the departmental kitchen/lounge or other public areas (such as restrooms).

### 5.4 Employment

Occasionally, grad students ask about working during the term.

One direction is via being a TA or RA, and receiving a monthly stipend.

- TA positions with stipends are almost always reserved for PhD students.

- RA positions can be available both to PhD and MS students. If you're interested in such a position, I would advise accumulating many "high passes," then going and talking to a professor you're interested in working with. (Note that PhD students *must* have a research advisor anyway—but getting an RA stipend is optional.)
- Students receiving a stipend may not take additional employment.

If you are not receiving a stipend, additional employment may be possible.

- If you're on an F-1 student visa, regulations permit part-time (20 hours/week) on-campus employment during the academic term and full-time (40 hours/week) employment during vacation periods—but only *for a Dartmouth employer*.
- Otherwise, the above constraints do not apply (but if you're international, check with OVIS just to be sure).

Nevertheless, *we caution you strongly against overcommitting yourself—particularly given the workload and fast pace of the Dartmouth academic term.*

**Summer Internships** Graduate students who wish to do an external CS-relevant internship as “practical training” can do so by registering for COSC295. You will need to consult with your Program Director (e.g., me, for MSCS students) for approval, beforehand, and file a short report at the end of the internship.

If an MSCS student does a summer internship via COSC295, he or she will not be charged tuition for that term.

## 5.5 Emergency Rooms

As noted earlier, we have two nearby hospitals: the giant Dartmouth-Hitchcock Medical Center and the smaller Alice Peck Day (now an affiliate of DHMC).

Both have emergency rooms.

- If your emergency is “simple” (e.g., asthma attack or broken leg), I recommend going to APD—there's usually no wait.
- If your emergency is “complicated” (e.g., heart attack or gunshot wound), go to DHMC—as that's where APD would send you.

For birth-related issues, go to DHMC—APD no longer handles that.

## 5.6 Winter Clothes

Occasionally, new students from warmer climates ask where to buy winter clothes! Besides the few places in Hanover itself, you might try:

- Hubert's, in Lebanon
  - <http://www.huberts.com/locations/>
- Farm-Way, in Bradford VT (gives a discount for Dartmouth ID—but is a bit far, and also, being in Vermont, sometimes charges sales tax)
  - <http://www.vermontgear.com/vtstore.html>.

- Eastern Mountain Sports, at the Powerhouse Mall in Lebanon, occasionally has items on sale at a good price. LL Bean (also at Powerhouse) can also have good deals.
- For used clothes, the “Listen Center” in Lebanon and White River has good deals.
  - <http://www.listencommunityservices.org/>

## 5.7 Vegetarians

One former CS denizen from India advises me to warn vegetarian Indians: soups in the US are commonly made from broth based on chicken or beef.

## 5.8 Coffee Shops

One of our grad alumni observed that graduate school is not necessarily possible without coffee shops. Here in Hanover, we have several:

- The Dirt Cowboy, opposite the southwest corner of the Green.
- Umpleby’s, between Main Street and the hardware store.
- The Nest Kitchen and Cafe, next to the Nugget theater.
- Still North, on Allen Street, just off of Main Street.
- Starbucks, down on the corner of Main and Lebanon
- Lucky’s, just off the green in downtown Lebanon, also has fans.
- There are also coffee shops embedded in Irving, in the Tuck Business School, and in Anonymous Hall. It’s even rumored that one will be opening in the basement of ECSC.