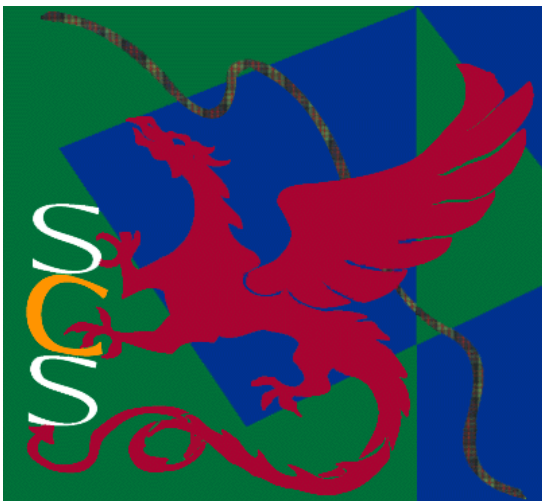




Master of Science in Computer Science Answers to Frequently Asked Questions





Frequently Asked Questions (...and answers, too!)

What is a MS in CS?

The MS in CS degree is a traditional, academic *Master of Science* degree. The program develops agile *Computer Scientists*, both applied and theoretical.

Students in the program develop a broad, deep, and agile foundation in the core areas of computer science. Beyond that, students may specialize in the area and/or application of their choosing or more fully develop a very broad base.

Some programs offer narrower, more focused degrees; for example in robotics, human-computer interaction, machine learning, software engineering, or data science. These programs are better suited for those who know exactly what they want, want to get to the most advanced depths in the area more quickly, and are willing to sacrifice breadth and agility to achieve this.

What are the prerequisites for the program?

The typical student accepted into the program has a bachelor's degree, substantial education or work experience in computer science or another engineering or applied scientific area, and enough educational or occupational experience in computer science to have demonstrated a clear interest and aptitude in computer science. Additionally, the applicant has enough educational background to be successful in graduate level courses in computer science without more than a very few "foundational" courses to enhance their background. Many of our students have bachelors degrees in computer science, but many also come with educational backgrounds in electrical and/or computer engineering, mathematics, physics, and even theater.

It goes without saying that successful applicants have truly excellent academic records in their own disciplines as well as in the computer science, mathematics, and applied science and/or engineering classes that they have taken.

Who should get an MS in CS degree?

An MS in CS degree at Carnegie Mellon is an opportunity to develop a world-leading, graduate level of depth and breadth in computer science. It is an excellent opportunity for those who studied engineering or mathematics to embark on a path toward an academic or industry career in computer science. It is an opportunity for those who may have switched majors into computer science late in their undergraduate careers, want to develop or switch areas of specialization within computer science, or who want to study an area of computer science that wasn't accessible at their prior school, to accomplish everything these goals. It is an excellent opportunity for those who developed a research interest late in their careers to engage in world-leading research and develop the track-record of success required for a successful PhD application at a top research school. It is an excellent way for the best students all over the world to come to join the well-recognized ranks of Carnegie Mellon alumni and take advantage of the employment opportunities in the United States (and all over the world) that a Carnegie Mellon degree can open.

Where can I find the program handbook?

- <http://www.csd.cs.cmu.edu/education/master/mscs-handbook-2014-2015.pdf>

How many courses should I take?

You need to maintain 36-units to stay full time. This is typical three 12-unit courses. But some courses are fewer units, so you may need 4 courses to stay full-time, depending upon your choices.

In general we recommend 3 courses during your first semester and 3-4 courses, thereafter. People do take more – but it doesn't seem to serve most people's goals very well. It is just too much of a good thing. And, in all honesty, students tend to get less out of each course when overloaded, so there is no net gain

I'm an incoming student. Do I have to take 15-513 over the summer, before I get to campus?

No – but we strongly recommend it. 15-513/213 has proven to reinforce the background of incoming students to ensure that they are prepared to succeed in our systems courses and others, such as graphics, which require significant programming projects. You may have studied the material before – but we recommend you review it via this course, anyway. It hones your skills and reinforces your background. It also gives you a common foundation and experience with your peers.

Because we feel so strongly about the value of the course, it is one of the very few that we make accessible to you over the summer, even before you get to campus.

I'm an incoming student. What should I take?

Courses here are intense. Very intense. It doesn't matter where you came from or how intense you think things were at your prior school. Carnegie Mellon is more intense. Our University motto is, "My heart is in the work." It is for all of us. But, it does take some acclimation before even the smartest and most prepared students can get into the stride. Please don't over reach.

Students typically take 3-4 courses. During your first semester, we recommend signing up for four courses, with a plan to quickly drop down to three courses. After that 3-4 courses are typically fine. It is fairly common to sign up for an "extra" course and then drop it later – just don't sign up for more than one "extra" or it makes it challenging for us to manage enrollment.

Exactly what you should take depends upon your goals and interests. But, common advice, applicable to many students, is to take 15-513/213, if you haven't already; and to take 15-651, if you haven't already taken an advanced, proof-based senior- or graduate-level algorithms course. Beyond that, especially for your first semester, diversity is your friend. We generally recommend one theory class, such as algorithm, plus one class with a major implementation project, such as distributed systems or graphics, plus a more balanced class, such as machine learning or AI.

The specific classes aren't important, these are just common suggestions. The big idea is to avoid putting yourself into a situation where you have to code 24x7 or proof theorems 24x7 or anything else 24x7, until you are acclimated, focused, and sure that is what you want. For most of us having a variety of cool things to do is better than doing only one type of cool thing.

I'm a returning student. What should I take?

We don't have generic advice for this at all, other than to take courses that interest you and make progress toward graduation. It really depends upon your background, interests and goals. The great news is that we have advisors who care. Please drop by and chat with one of us. We'll be happy to be a sounding board or to bounce some ideas off of you.

Where can I find a list of the courses?

Look for graduate-level (600-level and higher) courses offered by the computer science department here:

- <https://enr-apps.as.cmu.edu/open/SOC/SOCServlet/search>

Additionally, feel free to look at graduate-level courses offered by other units within the *School of Computer Science (SCS)*, e.g. *Robotics Institute, Human-Computer Interaction Institute, Machine Learning Department, Language Technologies Institute, Computational Biology Department, Institute for Software Research*, and within the *Electrical and Computer Engineering* department in the engineering college.

Although you need to ask and receive approval, we're usually willing to count graduate-level courses offered by other units within SCS, within the unit's area of specialization, which can count toward the requirements of graduate students within that unit, as qualifying courses for our own program. Additionally, many courses within the ECE department of the engineering college are fine choices for many of our students and can be approved upon request.

There are also plenty of other great courses offered by other great units that might be great options for certain students. If you think something is right for you – just ask your advisor.

Which courses are offered Spring? Fall? Summer?

The best way to find out is to look at recent fall and spring semesters on the schedule and see if there is a pattern. Additionally, you can check the Web pages for the courses and/or faculty. Or, the really easy thing to do is just to ask your advisor.

I did my undergrad at CMU. Can I count those courses?

Maybe. You can take up to two courses toward the MS in CS degree while you are an undergrad at CMU – but those courses cannot also be used to satisfy any major, minor, or other requirement of your undergraduate degree. They must have been completely “extra”. They can't be carried forward even if they were just used “for units”.

What is the *Immigration Course*?

This is a 3-unit course used to account for the acclimation to the CMU environment. It doesn't have regular meetings. Instead, it includes meetings with your advisor, your colleagues, getting to know faculty, research areas, etc. You can drop it, if you'd like. But, it represents real learning and a real time investment. We added it to your schedule during your first semester to encourage you to avoid overloading, so you wouldn't forget that it does take some effort and growth to get up to speed. It'll also enable you to maintain 36 units, even if you elect two 12-unit courses and a 9-unit course.

I'm on a bunch of waitlists. What should I do?

Relax. Email your advisor. In many cases we can get you off of the waitlist right away. In some cases, it'll take until the first week of classes. In rare cases, you may need to take the course a different semester. But, we don't let anyone get stranded over the long haul.

I want to stay for 4 semesters instead of 3. Can I do that?

As far as we are concerned, this is fine. But, for those coming from outside the United States, the reasons you are taking extra time need to be reconciled with US regulation. Your academic advisor and the *Office of International Education (OIE)* can help. Contact your advisor and s/he can help you from there.

I want to take a course outside of CSD and have it counted as a Qualifying course. Can I?

It depends upon the course and your academic goals. In many cases such courses can be approved. Please see your academic advisor.

Although you need to ask and receive approval, we're usually willing to count graduate-level courses offered by other units within SCS, within the unit's area of specialization that can count toward the requirements of graduate students within that unit, as qualifying courses for our own program. Additionally, many courses within the ECE department of the engineering college are fine choices for many of our students and can be approved upon request.

There are also plenty of other great courses offered by other great units that might be great options for certain students. If you think something is right for you – just ask your advisor.

Can I count an independent study as a Qualify course? What about two?

Independent studies, research courses, etc, are a little bit of wild cards. As long as they have graduate numbers, they can count as free electives. But, if you'd like them to count as qualifying, you'll need to get permission. Work out an independent study proposal with your supervisor, then bring it to your advisor for approval.

Only one independent study course (up to 12 units), or similar, will normally count as qualifying, even with approval. A second such course (and only second) can count, as long as it is associated with thesis research. It'll be accepted as qualifying upon receiving a grade of "B" or better and acceptance of the associated thesis by the research advisor and the program.

What if I want to do research?

You are in a great place. There is tremendous opportunity here. Get a solid start on your classes and do well. Once you've done that, toward the end of fall semester, chat with your academic advisor and/or your own instructors. They'll be happy to help introduce you to appropriate researchers and research groups.

But, don't do this until, at least, the end of the fall semester. Everyone here knows that courses are intense and that it takes a while to get acclimated. No one will want to invest time into you until you are ready to tackle courses and focus on research.

Can I get a TA? What about an RA?

By the book, you are not allowed to have a paid job on campus during your first year in the program. But, as long as you do well during your first semester, and find an appropriate opportunity, it may be possible to obtain special permission for an on-campus job during your second semester. Your advisor is your first step in seeking this special permission.

There are a ton of opportunities for paid positions TAing. There are a ton of opportunities to do research, but they don't usually pay, at least at first.

I am an international student. Do I need to do paperwork in order to work an internship?

Yes, please see your advisor. You need to register for something called *Curricular Practical Training (CPT)*. To do this, you need to bring a form, a copy of your offer letter, and a paragraph explaining how the internship relates to the things you are studying in the MS in CS program. Upon reviewing the material, your advisor can then approve the position as CPT and sign the form.

How do I find an internship? A real job?

Your first stop should be your academic advisor. From there, get in contact with your career consultant, Kevin Collins (kevinc@andrew). Together they will help you learn about the companies that recruit on campus and other opportunities, as well as prepare your resume and prepare for interviews. The *Technical Opportunities Conference (TOC)* is a recruiting event on campus like you've never seen. It comes relatively early in September. Even if you've just gotten here – forget that -- Dive in! There is also the *Employment Opportunities Conference (EOC)* in the spring, not to mention a ton of other recruiting events, tech talks, on-campus interviews, etc.

If you are an international student, please see your advisor in OIE very, very early in the semester before you graduate. The paperwork to obtain *Optional Practical Training (OPT)*, the most common type of post-graduation work authorization, is very straight-forward and routine – but it can take *months* for it to be processed. You'll want to make sure that you get started at the appropriate time, and are properly organized to help it to go smoothly and as quickly as possible.