

# Master of Science in Computer Science Student Handbook 2013-2014



**Master of Science in Computer Science  
Student Handbook  
2013-2014**

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## DIRECTOR'S WELCOME

As the Director of the *Master's of Science in Computer Science* program, I am excited to welcome each of you. Although this program is our newest, as one of its graduates, you will be immediately recognized as one among the finest computer scientists in the world. You will be part of the elite network of Carnegie Mellon computer science alumni dating back to our first graduate program in 1965.



Karl Crary, Director

Our curriculum charts a challenging course designed to ensure that you will develop a rich base in computer science, as well as depth and rigor that will enable you to become a technical leader. You will find compelling lectures by the world-renowned researchers and experts, thought-provoking readings, and projects of scale and complexity. You may have the opportunity to intern in the summer with leaders in industry or top-flight research groups on and off campus. By graduation you will find that you have developed an agile ability in computational thinking that will serve you across domains in the ever-changing landscape of your dynamic career.

Throughout the program, you won't be alone. You'll be supported by an engaged faculty, dedicated teaching assistants, and among the talented and collaborative group of your peers. You will have the guidance of academic and career advisors. You'll find that the best part of the program at Carnegie Mellon is the tremendous group of people that it brings together.

The best part of the program...is the tremendous group of people that it brings together.

If you are new to Pittsburgh, you'll find it to be a wonderful place to live. As a collection of neighborhoods, hosting world-class industries, medical centers, and institutions of higher learning, Pittsburgh offers the convenience of small town living with the richness and diversity of an international city.

If I can be of service, please feel free to email ([crary@cs.cmu.edu](mailto:crary@cs.cmu.edu)) make an appointment to speak with me by contacting Tracy Farbacher, the program administrator. She can be reached by email ([tracyf@cs.cmu.edu](mailto:tracyf@cs.cmu.edu)) or telephone (412-268-8824). We are at your service.

## PROGRAM HISTORY

“Computing at Carnegie Mellon evolved the way it should everywhere but doesn’t. There was a confluence of minds, tools and problems...and an appreciation of potential and consequences that spread far...”

—*Alan Perlis, First Department Head*



Alan Perlis  
First Department Chair

Led by a group of visionary enthusiasts, including Allen Newell, Herbert Simon, and Alan Perlis, the Department of Computer Science was formed in July 1965, with Alan Perlis as its head. As one of the first such departments in the nation, its creation was

Extending a legacy begun in 1965, the MS in Computer Science program was launched, accepting its first class, in the spring of 2012.

that an expansive approach to the field, fueled with solid science and a focus on the training of a new generation of scientists, would best serve the purpose of our campus and the industrial/academic community at large. This was a budding field, and Carnegie Mellon would be serving a critical role in populating the discipline with “trained professionals” who would be able to expand the parameters of what a computer could do and be used for.

Since its founding in 1965, the original department grew to form the School of Computer Science (SCS), which blossomed to encompass eight diverse units: the Computer Science Department (CSD), The Robotics Institute (RI), The Human-Computer Interaction Institute (HCII), The Language Technologies Institute (LTI), the Center for Automated Learning and Discovery (CALD), the Institute for Software Research (ISR), the Entertainment Technology Center (ETC), and the Lane Center for Computational Biology.

After many years of discussion and more than a year of detailed planning, the Computer Science Department launched the MS program in Computer Science. The first class was admitted in the spring of 2012 and will graduate in the winter of 2013.

what now seems an inevitable step. From the very beginning, Computer Science at Carnegie Mellon was interdisciplinary and, in fact, drew its early strength from this meshing of students and faculty from the component disciplines. It was clear

## PROGRAM OVERVIEW

The MS program in Computer Science offers students with a Bachelor's degree the opportunity to improve their training with advanced study in Computer Science. We cater to students with basic analytic skills and a strong aptitude for mathematics, programming, and logical reasoning. An undergraduate degree in computer science is not required.



The program is not based on a fixed set of courses. Instead, students construct their own course of study, in consultation with their advisors, within broad guidelines. Thus, a student may choose an area in which to specialize (such as networking, machine learning, or algorithms) or choose not to specialize at all.

Most students will complete the program in three semesters. Students switching into Computer Science from another field may require additional time to fill in gaps in their undergraduate training.

The program consists entirely of coursework; there is generally no research component. The program is distinct from the Doctoral program in Computer Science: Master's students will not usually continue into the Doctoral program. MS graduates are welcome to apply to the PhD program, but will not receive preferential treatment.

## PROGRAM ORIENTATION

**Orientation is mandatory and is held the Wednesday before the start of classes, Wednesday, August 21, 2013. Please plan to attend the entire orientation event. Do not make other plans for any portion of this day: morning, afternoon, or evening.**

During the orientation event, we will do our very best to welcome you to campus and the city, and to help you feel at home here, and get to meet your colleagues and key people on campus. We will review important policies, discuss important campus and community resources and resources, and help you to understand Carnegie Mellon's rich academic culture and traditions. We will help you get registered for classes.

## SELECTING AND REGISTERING FOR CLASSES

You will be contacted by an Academic Advisor prior to your arrival on campus. Your Academic Advisor will discuss your background, academic interests, career interests, and goals with you. Together with your Academic Advisor, you'll select courses for the fall semester.

You will register for classes before the first day of classes. Orientation is a convenient opportunity. Though rare, it is possible that some of your preferred classes will have wait lists. These usually get sorted out within the first few days of classes. Your Academic Advisor can help you understand the likely impact of being waitlisted for a course upon your intended schedule.

## CURRICULUM

The Master of Science program in Computer Science gives students advanced study in Computer Science. The program is not based on a detailed required curriculum. Instead, students create their own course of study in consultation with their advisor.

Students must complete six (6) Requirements:

- **Qualifying Master's courses:**

Students must pass 96 units in *qualifying* Master's courses. (Most courses are 12 units, so this typically means eight courses) A qualifying Master's course may be:

- Any graduate course from the Computer Science department. (That is, any course numbered 15-6xx, 15-7xx, or 15-8xx). Check the University's listings for current offerings.
- Any course from a list of approved advanced undergraduate courses.
- Any graduate course from a list of approved qualifying courses. (Students may petition to have courses added to the list.)



**Frequently offered graduate courses within the Computer Science Department include:**

- 15-600 Java and J2EE Programming
- 15-610 Engineering Complex, Large-Scale Computer Systems
- 15-637 Web Application Development
- 15-681 Machine Learning
- 15-685 Computer Vision
- 15-712 Advanced OS and Distributed Systems
- 15-740 Computer Architecture
- 15-744 Computer Networks
- 15-745 Optimizing Compilers for Modern Architecture
- 15-746 Advanced Storage Systems
- 15-750 Graduate Algorithms
- 15-780 Graduate Artificial Intelligence
- 15-781 Machine Learning
- 15-782 Artificial Neural Networks
- 15-812 Programming Language Semantics
- 15-814 Type Systems for Programming Languages
- 15-816 Linear Logic
- 15-817 Introduction to Model Checking
- 15-821 Mobile and Pervasive Computing
- 15-826 Multimedia Databases and Data Mining
- 15-831 Statistical Techniques in Robotics
- 15-845 Current Research Issues in Computer Systems
- 15-851 Computation and Deduction
- 15-852 Computational Geometry
- 15-853 Algorithms in the Real World
- 15-855 An Intensive Introduction to Computational Complexity

## **CURRICULUM, *cont.***

### **Frequently offered graduate courses within the Computer Science Department include (cont):**

- 15-857 Performance Modeling and Design of Computer System
- 15-859 Machine Learning Theory
- 15-859 Mathematical Games
- 15-867 The Animation of Natural Phenomena
- 15-879 Algorithms for Computational Structural Biology
- 15-883 Computational Models of Neural Systems
- 15-887 Planning, Execution and Learning
- 15-892 Foundations of Electronic Marketplaces
- 15-894 Technically Speaking
- 15-600 Java and J2EE Programming
- 15-610 Engineering Complex, Large-Scale Computer Systems
- 15-637 Web Application Development
- 15-681 Machine Learning
- 15-685 Computer Vision
- 15-712 Advanced OS and Distributed Systems
- 15-740 Computer Architecture
- 15-744 Computer Networks
- 15-745 Optimizing Compilers for Modern Architecture
- 15-746 Advanced Storage Systems
- 15-750 Graduate Algorithms
- 15-780 Graduate Artificial Intelligence
- 15-781 Machine Learning
- 15-782 Artificial Neural Networks
- 15-812 Programming Language Semantics
- 15-814 Type Systems for Programming Languages
- 15-816 Linear Logic
- 15-817 Introduction to Model Checking
- 15-821 Mobile and Pervasive Computing
- 15-826 Multimedia Databases and Data Mining
- 15-831 Statistical Techniques in Robotics
- 15-845 Current Research Issues in Computer Systems
- 15-851 Computation and Deduction
- 15-852 Computational Geometry
- 15-853 Algorithms in the Real World
- 15-855 An Intensive Introduction to Computational Complexity
- 15-857 Performance Modeling and Design of Computer System
- 15-859 Machine Learning Theory
- 15-859 Mathematical Games
- 15-867 The Animation of Natural Phenomena
- 15-879 Algorithms for Computational Structural Biology
- 15-883 Computational Models of Neural Systems
- 15-887 Planning, Execution and Learning
- 15-892 Foundations of Electronic Marketplaces
- 15-894 Technically Speaking

## **CURRICULUM, *cont.***

### **Qualifying advanced undergraduate courses:**

- 15-312 Principles of Programming Languages
- 15-317 Constructive Logic
- 15-359 Probability and Computing
- 15-410 Operating System Design and Implementation
- 15-411 Compiler Design
- 15-412 Operating System Practicum
- 15-414 Bug Catching
- 15-417 HOT Compilation
- 15-418 Parallel Computer Architecture and Programming
- 15-440 Distributed Systems
- 15-441 Computer Networks
- 15-451 Algorithms
- 15-462 Computer Graphics
- 15-463 Computational Photography
- 15-466 Computer Game Programming

### **Qualifying courses outside of CSD:**

- 02-712 Computational Methods for Biological Modeling and Simulation
- 05-813 Human Factors
- 05-891 Designing Human-Centered Software
- 10-601 Machine Learning
- 10-702 Statistical Machine Learning
- 10-705 Intermediate Statistics
- 10-708 Probabilistic Graphical Models
- 10-725 Optimization
- 11-741 Information Retrieval
- 11-772 Analysis of Social Media
- 16-642 Manipulation, Mobility and Control
- 16-720 Computer Vision
- 16-811 Mathematical Foundations for Robotics
- 17-651 Models of Software Systems
- 17-654 Analysis of Software Artifacts
- 17-993 How to Write a Good Research Paper
- 18-730 Introduction to Computer Security
- 18-739 Foundations of Privacy and Security
- 18-741 Advanced Computer Architecture
- 18-742 Parallel Computer Architecture
- 18-756 Packet Switching and Computer Networks
- 18-847 Data Intensive Computation and Storage
- 21-701 Discrete Math
- 47-830 Integer Programming
- 47-834 Linear Programming
- 80-713 Category Theory

## CURRICULUM, *cont.*

- **Free elective:**

Students must pass 12 free-elective units. (Typically one course.) A free-elective course may be:

- Any graduate course in the university. (Numbered 6xx, 7xx, or 8xx).
- Any upper-level Computer Science undergraduate course. (15-3xx or 15-4xx.)
- Any course approved by the student's Academic Advisor.

Note that the qualifying-course and free-elective requirements are disjoint. That is, no course may be used both as a qualifying course and as a free elective.

- **Systems breadth requirement:**

Students must pass one course drawn from a menu of systems courses. That course may also be used as a qualifying course.

- 15-410 Operating Systems
- 15-411 Compiler Design
- 15-412 Operating System Practicum
- 15-415 Databases
- 15-418 Parallel Computer Architecture and Programming
- 15-440 Distributed Systems
- 15-441 Computer Networks
- 15-610 Engineering Distributed Systems
- 15-712 Advanced Operating Systems
- 15-740 Computer Architecture
- 15-744 Computer Networks
- 15-745 Optimizing Compilers
- 15-746 Advanced Storage Systems
- 15-821 Mobile and Pervasive Computing
- 15-826 Multimedia Databases and Data Mining

- **Theoretical foundations breadth requirement:**

Students must pass one course drawn from a menu of theoretical foundations courses. That course may also be used as a qualifying course.

- 15-312 Foundations of Programming Languages
- 15-317 Constructive Logic
- 15-414 Bug Catching: Automated Program Verification and Testing
- 15-451 Algorithms
- 15-750 Graduate Algorithms
- 15-812 Programming Language Semantics
- 15-814 Type Systems for Programming Languages
- 15-817 Model Checking and Abstract Interpretation
- 15-819 HOT Compilation
- 15-853 Algorithms in the Real World
- 15-855 Complexity Theory
- 15-857 Performance Modeling
- 15-859 Randomized Algorithms

## CURRICULUM, *cont.*

- **Artificial Intelligence breadth requirement:**

Students must pass one course drawn from a menu of artificial intelligence courses. The course may also be used as a qualifying course:

10-601 Machine Learning  
10-725 Optimization  
15-780 Graduate Artificial Intelligence  
15-781 Machine Learning  
15-887 Planning, Learning and Execution  
16-720 Computer Vision

## FOUNDATIONS

Many of the required courses require a level of competency in foundational areas similar to that typically found in BS in CS graduates at Carnegie Mellon. Those lacking this background should discuss scheduling dependencies and explore the possibility of a 4-semester schedule, including a foundational semester, with their Academic Advisor. The following areas and related courses are commonly of interest:

- **Imperative or Object-Oriented Programming:** Understanding of the object-oriented or imperative programming paradigms and confidence in software design and implementation in a corresponding compiled language, such as C, C++, or Java. [Mitigate with 15-122 + 15-213/513]
- **Functional Programming:** Understanding of the functional programming paradigms and confidence programming in a corresponding language, such as ML, Haskell, or OCaml. [Mitigate with 15-151, and possibly 15-210]
- **Fundamental Data Structures and Asymptotic Analysis:** Ability to implement and efficiently use fundamental data structures and algorithms, such as lists, trees, sorts, searches, hash tables, as well as the ability to perform basic asymptotic analysis, e.g. Big-O, of their operations [Mitigate with 15-122 or 15-150+15-210 or 08-722]
- **System Programming:** The ability to use debuggers and read assembly to analyzing programs, to use processes and threads as a tool for concurrent and/or expressive programming, to manage concurrency, and to use an understanding of system design, such as memory hierarchy to improve program performance [Mitigate with 15-213/513]
- **Mathematical Theory:** Exposure to elementary number theory, induction, the algebra of sets, equivalence relations, congruencies, recurrence equations, graph theory, and the methods of mathematical proof. [Mitigate with 21-127 or 15-151]
- **Theory of Probability:** Background in probability spaces, random variables, expectations, conditional probability and independence, limit theorems such as the strong law of large numbers and the central limit theorem, random walks [Mitigate with CMU OLI Probability & Statistics or 21-325 or 36-225]

## ACADEMIC POLICIES



### Passing Grades

A passing grade is C or higher, regardless of the home department or level of the course. A passing grade is required for a course to count toward the Requirements or to serve as a prerequisite for another course.

### Minimum QPA

During each semester, students must achieve each of a 3.0 QPA across all courses taken during the semester and also a 3.0 QPA in Qualifying Courses. Furthermore, students must maintain a minimum of a 3.0 QPAs cumulatively across all semesters.

### Dean's List

Each semester, the Director, or designee, may nominate students to the Dean for inclusion on the *Dean's List*, which recognizes those students with the highest level of academic achievement. The nomination is according to criteria established from time-to-time by the Director. At the time of writing, the Director nominates those full-time students who earn "A" grades (A+, A, A-) in all Requirements satisfying classes taken during the semester for which the nomination is being made.

### Academic Advising

Students are required to review their academic plans and proposed schedules with their assigned Academic Advisor prior to registering for classes and prior to adding or dropping any courses intended to be used to satisfy Requirements.

### Registration, Adding and Dropping Courses

Newly admitted students will receive information about course registration. The timetable for course registration, as well as for adding and dropping courses is set by the University as published in the official academic calendar, which can be found here:

<http://www.cmu.edu/hub/calendar.html>

### Restricted Enrollment

Not all classes at Carnegie Mellon are open to all students. Some classes are restricted by program, by year, or by prerequisites. A few require permission of the instructor, portfolio reviews, auditions, etc. Some courses may have reservations governing how many students may enroll from particular programs or seniority levels. If you are encountering difficulty registering for a desired class, please see your Academic Advisor, who may (or may not) be able to help you register for certain courses within the School of Computer Science, and can often offer advice about similar or alternative courses, the likelihood of getting registered, etc.

### Responsibility for Satisfying Requirements

It is the sole responsibility of the student to satisfy all requirements of the Program. The Director, Administrator, Advisors, and other faculty and staff, although sources of information and advice, are not responsible for notifying students of deficiencies in their academic plans or progress. Students are strongly encouraged to become familiar with the requirements and to review their progress each semester.

## **ACADEMIC POLICIES, *cont.***

### **Satisfying Prerequisites**

Some students may need to take additional courses that do not satisfy any program requirement, in order to satisfy pre-requisites for other courses. This is especially true for students with educational backgrounds other than traditional computer science degrees.

Based on our experience we expect and encourage students to take 15-513 or 15-213 (Introduction to Computer Systems) prior to taking required or elective systems classes, and, if possible, prior to arrival on campus in the fall. 15-513 has been especially designed to offer a low-unit, low-cost option for Master's students. It can be taken over the Internet during the summer prior to your first semester on campus.

### **Progress Toward Degree**

Students with at least two remaining Requirements must register for, and maintain, a schedule that includes at least two courses that are Requirements or Prerequisites for Requirements.

### **Program Timeframe**

The Program is designed to be completed in no more than four (4) semesters and in three (3) semesters by those with a sufficiently foundational and rigorous undergraduate education in computer science or strongly related field. As a consequence, students may not remain enrolled in the program for more than four (4) semesters, without the prior written or email permission of the Director.

### **Course Load**

Because courses at Carnegie Mellon are very demanding, the program defines a maximum course load, which may be different for incoming and returning students. Academic Advisors can increase the maximum course load for an individual student, based upon that student's academic plan and achievement. Your academic advisor will increase your maximum course load, if needed, to allow you to register for any appropriate schedule. Please seek your Academic Advisor's guidance prior to registering, dropping, or adding classes.

### **Overlapping Courses**

As attendance is expected in all courses, students are not permitted to enroll in courses that overlap in time. Please schedule only courses that you are able to attend.

### **Transfer of Credit From Other Institutions**

Courses from other institutions may not be used to satisfy any requirement of the program. Certain courses taken at other institutions may be approved by the Director to satisfy prerequisite requirements for courses used to satisfy program requirements.

To request prerequisite credit please provide an official transcript documenting your participation and grade in the course, as well as the course syllabus, to the program Administrator. Once this is done, email the Director explaining your request. Your request is not approved until you have received written or email approval from the Director or Administrator.

## **ACADEMIC POLICIES, *cont.***

### **Transferring Credit From Within Carnegie Mellon**

Up to two courses taken at Carnegie Mellon prior to matriculation into the Master's program may be eligible to be counted toward the program Requirements. These courses cannot satisfy any requirement, including a unit count requirement, of any degree or certification earned prior to, or concurrent with, any portion of the Master's program. To request such credit, please email the Director explaining your request. This email constitutes permission for the Director or designee to review your prior CMU academic records for this purpose. Your request is not approved until you have received written or email approval from the Director or designee.

### **Curricular Practical Training (CPT) and Optional Practical Training (OPT)**

International students may be eligible to take part in paid summer internships via *Curricular Practical Training (CPT)* and to participate in *Optional Practical Training (OPT)* for up to 12 months during and after the Program, and may additionally qualify for a 17 month OPT extension post-graduation, under a special program for *Science Technology Engineering and Mathematics (STEM)*. Government regulations are often nuanced and may change at any time. Interested students should contact their Academic Advisor and/or the *Office of International Education* for more information.

### **Grandfathering of Requirements**

A student is generally bound to the Requirements in force at the time of matriculation, but may elect to satisfy any curriculum Requirements more recent than those under which they matriculated, e.g. a student matriculating in the 2012-2013 academic year may elect to satisfy the Requirements in force during the 2013-2014 academic year.

Because the Master's program is relatively short and in a relatively rapidly changing area, students returning from Leave or Suspension may not be able to return under the same catalogue year, e.g. Requirements, under which they originally matriculated, as the supporting courses may no longer be offered or offered in their original form. Under these circumstances, the Director may approve exceptions to the prior Requirements or require that the returning student satisfy the requirements of more current Requirements, at the Director's option..

Additionally, the Director may revise the Requirements from time to time, so long as these revisions do not unreasonably impede the graduation of those in good standing. The Director may approve exceptions to revised requirements to mitigate the impact of revisions upon those affected.

### **Graduation and Award of Degree**

The University's academic regulations govern graduation and the award of academic degrees, including the Master's in Computer Science. The Director shall not unreasonably withhold the certification for graduation of any candidate who satisfies the Requirements of the Program. But, strictly speaking, neither this certification nor this recommendation guaranty that the University shall award a degree. For example, the University may withhold degrees for individuals who have unsatisfied financial obligations.

### **Withdrawal of Degree**

The University reserves the right to withdraw a degree even though it has been granted should there be discovery that the work upon which it was based or the academic records in support of it had been falsified. In such a case the degree will be withdrawn promptly upon discovery of the falsification.

## **ACADEMIC POLICIES, *cont.***

### **Academic Integrity**

The work you submit must be your own, unless you have clearly attributed it to others. You must not use the work of others without proper citation. And, you must not use resources, including other persons, except as authorized by the course or project for which you are submitting the work. Such conduct might be accepted or commonplace elsewhere, but it is not here. Be careful. Be warned. **Failure to abide by these rules, even just once, can result in your permanent separation from the University without refund of monies paid.**

Please review the University's full policy here:

<http://www.cmu.edu/policies/documents/Cheating.html>

### **Enforcement of Academic Policies**

Any student who fails to achieve the minimum QPA, or otherwise fails to make appropriate progress toward graduation falls out of Good Standing with the Program. The first time a student falls out of Good Standing, the student is subject to Academic Probation, which serves as a warning to the student and may also trigger supportive actions on the part of the program, such as advising meetings and reduced maximum course loads

If, after one semester the student has not returned to Good Standing, or should a student fall out of Good Standing more than once during the course of the Program, the student is subject to Academic Suspension, which is a mandatory, but temporary, leave from the University. It serves as an opportunity for the student to re-evaluate goals, reflect on the requirements for success, and return to the University better prepared to succeed. Any student, who having ever previously been placed on Academic Suspension, fails to remain in Good Standing, may be Dismissed from the program (*i.e.*, expelled). Dismissal indicates a complete and permanent separation of the student from the Program.

## ADMINISTRATIVE POLICIES

### Program Director, Role of

The Director is responsible for the conduct of the Program. The Director has the power to interpret all policies and, with good cause, to grant exceptions to Requirements and policies, as well as to revise them. The Director has the power to delegate this authority.



### Employment During Academic Year

The Program is designed to be full-time and Carnegie Mellon is very demanding. Students within the Program are not permitted employment by Carnegie Mellon during their first two full-time semesters at Carnegie Mellon. This includes, but is not limited to, positions such as paid teaching or research assistantships.

Students are permitted to conduct research, participate in teaching activities, etc., as unpaid volunteers or for course credit, so long as doing so does not interfere with academic performance or progress.

At the discretion of the Director students violating this policy may be suspended or dismissed from the Program.

### Summer Employment/Internships

Students are encouraged to seek on and off campus opportunities for internships and other employment which reinforces and enhances scientific and professional development.

Special procedures may be required for international students, including the requirement to register and maintain enrollment in a paid dovetailing course. Please contact the Office of International Education (OIE) for details:

<http://www.studentaffairs.cmu.edu/oie/>

### Leave of Absence/Withdrawal

Matriculated students may voluntarily separate themselves from the University through two mechanisms. A “Leave of Absence” is a separation which is intended to be temporary. In other words, a student who requests a leave of absence states that it is their intention to return in the future. A student may also “Withdraw” from the University, in which case the student is stating to the University that they are separating themselves from the University with no intention of returning.

Should the University choose to grant a student’s request for a Leave of Absence, it may impose conditions upon the student’s return. For example, should a student request and receive permission to take a Leave of Absence during a period of academic difficulty, the Program may require the student take particular courses upon return or take particular steps to reinforce prerequisite material prior to return. These conditions, to the extent that they are known in advance, are documented on the request form prior to its approval.

The Program adheres to the University’s procedures, policies, and process for leaves of absence and withdrawals. They can be found here:

<http://www.cmu.edu/policies/documents/StLeave.html>

## **ADMINISTRATIVE POLICIES, cont.**

### **Leave of Absence/Withdrawal, *cont.***

The Program adheres to the University's procedures, policies, and process with respect to the student's financial obligations as affected by leaves and withdrawals. These policies can be found here:

<http://www.cmu.edu/hub/tuition/adjustment.html>

Students who fail to meet required standards of academic achievement may be required to leave the University, either temporarily or permanently. The University policies governing these academic actions can be found here:

<http://www.cmu.edu/policies/documents/Suspension.html>

### **Return from Leave of Absence**

Students seeking to return from a Leave of Absence should contact their academic advisor to review their academic situation and academic plans and to ensure that any conditions that were set at the time the leave was granted are satisfied. The next step is to complete and submit the "Petition to Return from a Leave of Absence" Form (available from the HUB). This request should be completed at least one month prior to the start of the semester. Students may not return from a Leave of Absence until this petition is approved by the University.

Further information about the Carnegie Mellon University Student Return Policy can be found at the following website:

<http://www.cmu.edu/policies/documents/StReturns.html>

### **Transfer within CSD, SCS or CMU**

Each degree program within Carnegie Mellon operates according to its own admissions process. Admission into one program does not guarantee admission into any other program, nor does it grant any preference.

Students within Carnegie Mellon seeking to transfer into the Master's Program should contact the Administrator for information about applying. Students within the Program who seek to transfer to another program at Carnegie Mellon should contact that program for information about their requirements and process.

### **Deferred Matriculation**

Offers for admission into the Program are valid only for the academic year for which they are issued. There is no right to defer an admission offer. Should it be necessary to delay your entry to the Program, it may be necessary to reapply, including payment of any necessary fees. Should your circumstances necessitate a delay in your matriculation after your acceptance, please contact the Administrator or Director to request a deferral, which is granted solely at the discretion of the Program.

## **ADMINISTRATIVE POLICIES, cont.**

### **Full-time Status Requirement**

Those students admitted with full-time status are, in general, required to carry a full-time course load, presently defined by the University as 36 units. Full-time students seeking to convert, temporarily or permanently, to part-time status may request approval from the Director. Because University policy generally prevents the conversion from part-time status to full-time status beyond the enrollment period at the beginning of the semester, status changes should only occur between semesters.

Under certain circumstances international students may be required to maintain full-time student status. International students must seek the advice of the Office of International Education (OIE) before assuming a part-time status, even if that status is approved by the program Director or Administrator.

### **Financial Obligations and Policies**

It is essential that your tuition and other fees be paid on time. The University has a variety of mechanisms to sanction those with delinquent accounts, including withholding degrees, transcripts and registration.

Academic departments do not usually receive information about a student's financial situation, so we are unable to help you with financial difficulties and processes. Please contact the HUB for more information about financial policies, procedures, and practices:

<http://www.cmu.edu/hub/>

### **Privacy and FERPA**

Under the Family Educational Rights and Privacy Act (FERPA), a student has the right to:

- Inspect and review his/her education records
- Request an amendment to his/her education records if the student believes they are inaccurate or misleading
- Request a hearing if his/her request for an amendment is not resolved to his/her satisfaction
- Consent to disclosure of personally identifiable information from his/her education records, except to the extent that FERPA authorizes disclosure without his/her consent
- File a complaint with the U.S. Department of Education Family Policy Compliance Office if he/she believes his/her rights under FERPA have been violated

Please review the University's full privacy policy:

<http://www.cmu.edu/policies/documents/StPrivacy.html>

### **Intellectual Property**

The Program incorporates the University's policy on intellectual property, which can be found here:

<http://www.cmu.edu/policies/documents/IntellProp.html>

## **ADMINISTRATIVE POLICIES, cont.**

### **Harassment, Sexual Harassment**

The free exchange of ideas, the confidence to work, to study, to innovate, and to perform, even the standards of discussion and performance to which the University is dedicated are based upon an atmosphere of open trust and mutual respect - an atmosphere on which the intrusion of personal advantage or harassment, in any of its forms, can only be destructive to the desired environment.

Sexual harassment, like all forms of harassment, is prohibited by the University. Any faculty member, staff employee, or student found to have violated the University's policies against harassment, including sexual harassment, will be subject to immediate and appropriate disciplinary action, including possible suspension, termination, or separation from the program or permanent expulsion from the University. Please read the complete policy:

<http://www.cmu.edu/policies/documents/SexHarass.html>

### **Incorporation of Applicable SCS and University Policies**

This handbook describes policies unique to the Master's in Computer Science Program, as well as many University policies of interest to students within the Program. It is however not comprehensive. You can find applicable University-level policies here:

<http://www.cmu.edu/policies/>

Additionally, the School of Computer Science and the Computer Science Department may adopt policies applicable to students within the Program.

### **Enforcement of Administrative Policies**

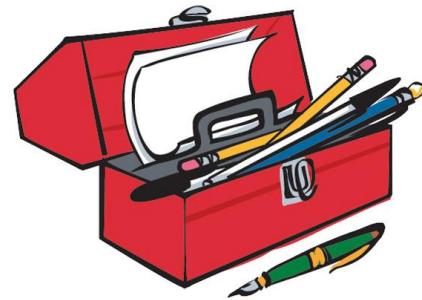
Violations of Administrative policies, at the discretion of the Director, may result in sanctions including, but not limited to, probation, suspension or separation from the program.

### **Statement of Assurance**

Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Furthermore, Carnegie Mellon University does not discriminate and is required not to discriminate in violation of federal, state, or local laws or executive orders.

Inquiries concerning the application of and compliance with this statement should be directed to the vice president for campus affairs, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2056. Obtain general information about Carnegie Mellon University by calling 412-268-2000.

## RESOURCES AND REFERENCE



### Career

The Career and Professional Development Center is an outstanding resource to guide you as you begin the process of thinking about internships and life after graduation. The career consultant for the School of Computer Science is Kevin Collins (kevinc@andrew.cmu.edu). He is an excellent source of information about employers and opportunities, as well as a great resource as you prepare your resume and prepare for interviews. Since the Master's program is intense, but short, you are encouraged to contact him during your first semester.

There are many career and internship fairs on campus, including the Technical Opportunities Conference (TOC) early in the fall semester, and the Employment Opportunities Conference (EOC) early in the spring semester.

For more information, and for information about additional resources, please do check the Center's Web portal:

<http://www.studentaffairs.cmu.edu/career>

### International Students

The Office of International Education at Carnegie Mellon University is committed to supporting, promoting, and celebrating individuals in an intercultural environment. They advocate for and facilitate international and cross-cultural experiences, perspectives and initiatives. They also help international students with the process of coming into the United States and maintaining legal status here, as well as with the process of settling in within the United States and on campus.

Their Web site is a great resource and contains their contact information:

<http://www.studentaffairs.cmu.edu/oie/>.

### Academic Calendar

The Academic Calendar contains important dates, such as those of the registration periods, add and drop deadlines, University holidays and observances, and the final exam period. The Academic Calendar can be found here:

<http://www.cmu.edu/hub/calendar.html>

### Computing

Carnegie Mellon has a rich computing environment, including OS X-, Linux-, and Windows- based computers, public printers, public wireless networking, and a large library of software licensed for use by students.

More information about these resources can be found on the Computing Services Web pages:

<http://www.cmu.edu/computing/new-user/graduate/>

Information specifically for new graduate students can be found here:

<http://www.cmu.edu/computing/new-user/graduate/index.html>

If you need assistance, you can contact the Help Center at 412-268-HELP or [advisor@andrew.cmu.edu](mailto:advisor@andrew.cmu.edu).

## **RESOURCES AND REFERENCE, *cont.***

### **Research**

Your Academic Advisor and your course professors are your primary points of contact to find research opportunities. By working through them, you will be able to contact interested research groups directly, without wasting your time and energy, and that of others, by contacting research groups that are not a good fit for you at this time. **It is considered extremely poor form to contact research groups without getting an introduction from a professor who knows you well or Academic Advisor.** In any case, keep your advisor up-to-date on your research plans, needs, and progress.

### **Parking**

Parking on campus is largely based upon an annual fee-for-permit system, although there are a few short-term meters, and the East Campus garage accepts fee-per-use users at low-volume times, and is often free on evenings and weekends. For more information about parking on campus, please contact Parking and Transportation Services:

<http://www.cmu.edu/parking/>

### **Housing**

Carnegie Mellon offers on- and off- campus housing for students, and resources for finding housing in the community. For more information see the Housing Service information page for graduate students:

<http://www.cmu.edu/housing/graduate-students/>

### **University and Public Transit Systems**

The Port Authority of Allegheny County (PAT) operates a system of buses and trains that serve the greater Pittsburgh area. Your University ID serves as a pass that allows you to ride most, if not all, of these services for free. You can find routes and schedules here:

<http://www.portauthority.org/paac/default.aspx>

The University provides a shuttle bus system that is a fixed route, fixed stop transportation option which is available to all CMU students, faculty, and staff. There are different shuttle buses which operate within the geographical areas which surround Carnegie Mellon. Presently, there are buses which service the Squirrel Hill, North Oakland and Shadyside areas. There are also shuttles serving Bakery Square (Google headquarters) and the PTC (Pittsburgh Technology Center).

The Escort Service is a transportation option that services the geographical areas surrounding Carnegie Mellon, to include Squirrel Hill, Shadyside, and Oakland. The service provides transportation from 9 designated campus pick-up locations to the intersection closest to the rider's residence. The pick-up locations are marked by official university signage, bearing the word "Escort". The Escort Service is limited to a 1.5 mile radius from campus.

More information about shuttles and escort can be found here:

<http://www.cmu.edu/police/shuttleandescort/>

## **RESOURCES AND REFERENCE, *cont.***

### **Police**

University Police provide traditional security and police services on campus, as well as operate crime prevention programs, offer Rape Aggression Defense Systems (RADS) classes, fingerprinting services, and operate a lost and found. They can be reached by dialing 8-2323 from any campus phone. Their Web pages can be found here:

<http://www.cmu.edu/police/>

When off campus, in order to contact the local police, call the emergency dispatcher by dialing 9-1-1 from any cellular or landline phone.

### **Emergency Medical Assistance**

For emergency medical assistance on campus, call the University Police dispatcher at 412-268-2323. In most areas off campus, dialing 9-1-1 will put you in touch with an emergency dispatcher who can summon emergency medical assistance, e.g. an ambulance, for you.

### **Routine Medical and Health Care**

University Health Service is the on-campus health center. It is available to provide students with routine health and medical care, and to help students find health and medical resources off-campus, when needed.

Appointments can be made on-line and by phone. For more information, please consult their Web site:

<http://www.cmu.edu/health-services/>

### **Counseling and Psychological Services**

Counseling and Psychological Services (CAPS) offers students the opportunity to talk privately about personal, academic, or other concerns in a safe, confidential setting. After an initial consultation with a CAPS therapist, students are referred to available mental health resources at Carnegie Mellon or in the larger Pittsburgh community.

For an appointment, call 412-268-2922 during regular office hours. *For emergencies, the phone is answered 24x7: every day, including holidays, at all hours of the day and night.*

### **Sexual Harassment Advisors**

Trained advisors are available to talk with members of the community who have questions or concerns about sexual harassment. They can also provide information about established guidelines and procedures for dealing with issues of sexual harassment and its prevention, and will help individuals pursue effective courses of action. In the exercise of their functions, the sexual harassment advisors will maintain the greatest degree of confidentiality consistent with their responsibilities as university representatives.

A list of trained advisors can be found here:

<http://www.cmu.edu/policies/documents/HarassSupplement.html>

## **RESOURCES AND REFERENCE, *cont.***

### **Graduate Student Assembly (GSA)**

The Graduate Student Assembly (GSA) is the primary campus-wide organization run by graduate students for graduate students. It is a vehicle for collaboration between graduate students and the University administration and the general student body, and is one element of the University's structured Student Government. One very notable role on campus is providing events for graduate students from across campus to take a break from their studies and research, get together, relax, and have some fun. More information about GSA and GSA events can be found on their Web page:

<http://www.cmu.edu/stugov/gsa/>

### **Program Contact and Phone Numbers**

Tracy Farbacher, Program Administrator, 412-268-8824, GHC 9129, [tracyf@cs.cmu.edu](mailto:tracyf@cs.cmu.edu)

Tracy is responsible for the day-to-day administration of the Program. She is the first place you should turn for information about the Program, and can help you with most of your concerns or connect you with those who can.

Gregory Kesden, Assistant Program Director, 412-268-1590 (cell), GHC 7711, [gkesden@cs.cmu.edu](mailto:gkesden@cs.cmu.edu)

Prof. Kesden is the primary initial point of contact for any academic concerns, including academic advising and planning, class offerings, registration, research opportunities, teaching assistant opportunities, etc.

Kevin Collins, Career Counselor, 412-268-2064, GHC 4109, [kevinc@andrew.cmu.edu](mailto:kevinc@andrew.cmu.edu)

Kevin is a tremendous resource for students. He works alongside your academic advisor, and specializes in helping computer science students find job and internship opportunities, prepare for interviews, compare offers, and search for the right career path.

Karl Crary, Program Director, 412-268-7687, GHC 9217, [crary@cs.cmu.edu](mailto:crary@cs.cmu.edu)

Prof. Crary is the Director of the Program and is ultimately responsible for the curriculum, policies, procedures, and practices. The best way to get in touch with him is to contact Tracy for an appointment or to email him directly.

## RESOURCES AND REFERENCES, cont.



## **RESOURCES AND REFERENCES, cont.**

