Course Requirements for Master's Degree in Computer Science

There are two types of requirements necessary for the Master's degree in Computer Science. The first are the general requirements of the School of Engineering and Applied Sciences. The second are additional requirements specific to the Computer Science degree. Here we explain these various rules and guide students as to how they should be interpreted to develop an appropriate plan of study for a Master's degree.

To begin, it should be clarified that the Committee on Higher Degrees (CHD) is responsible for overseeing all programs for students in the School of Engineering and Applied Sciences, including Computer Science. Any plan of study must therefore be approved by the CHD. Even if your faculty advisor approves your plan of study, the final approval lies with the CHD, which has the responsibility of seeing that all of the rules and guidelines are appropriately followed. The document "Policies of the Committee on Higher Degrees" describes the rules and regulations of the School. The key things the CHD looks for in a program of study are technical depth and coherence in the choice of courses in the program.

Exceptions to the rules are certainly possible. The CHD looks for exceptional circumstances or arguments from the student and the student's advisor when determining whether to give an exception.

School-wide Rules and Corresponding Guidelines

(1) At least four of the eight courses must be taken in the School, and at least five of the eight courses must be graded 200-level courses or their equivalents. Note that 299r or other independent reading and research classes are NOT considered equivalent to 200-level courses for this purpose. The specific requirements for computer science are in fact more stringent than this and are outlined below.

A related key point to keep in mind is that it is expected that students will take courses within the School when suitable courses are offered. Taking courses outside the School, such as for example at MIT, is possible, but when equivalent or near-equivalent courses are offered within the School, it is expected that you will take that course. As an example, currently Cryptography is offered at the 200-level within the School. You would generally be expected to take that course instead of a similar course at MIT, unless there was a significant problem in terms of scheduling or a similar exceptional circumstance.

(2) 200-level courses in fields outside the School will also be examined carefully. Generally, the CHD is looking for two things. First, it is expected that the course will be comparable in technical level to a School course. Second, the overall program must be coherent. Taking a course in economics because it might apply to computing is not automatically considered coherent. Taking an economics course in game theory along with appropriate relevant 200-level computer science courses in Artificial Intelligence that apply that theory could be part of a coherent program.
Three of the eight courses MAY be 100-level courses in the School or the Faculty of Arts and Sciences. 100-level courses are appropriate when a student's advisors judge such courses necessary to meet the educational goals of the program. Students should be warned against over-extending this apparently lenient policy in creating their program of study. School policy clearly states that students are expected to take as many of the eight courses as possible from the 200-level courses of the School. The policies also state that "For a graduate student to take a 100-level course in his/her chosen field normally must be regarded as remedial," and "In every case, the inclusion of a 100-level course in a SEAS graduate degree program must be justified either on the merits of the particular course or on its role as an integral part of the overall program."

100-level courses are therefore only acceptable under appropriate circumstances, such as when they are arguably necessary to construct a coherent program. As an example, a student (particularly a student with an undergraduate degree outside of computer science) may require an undergraduate course at the 100-level to obtain appropriate background before pursuing a graduate-level course in that area. Similarly, it might be reasonable for a student without sufficient prior mathematical background to take a 100-level mathematics course in Number Theory before taking a course in Cryptography.

As a rough guideline, having one 100-level course will generally not lead to any concern. Having two requires at least some justification, such as the courses are necessary prerequisites for other 200-level courses. Having three will generally lead to close examination by the CHD.

(4) Normally at most one 299r course can be counted toward the eight courses. As mentioned before it does not count as one of the five required 200-level courses.

Rules and Corresponding Guidelines Specific to Computer Science

Programs for Master's degrees in Computer Science must also conform to the following rules. (Again, you can always petition for an exception, but these are the standard rules that apply.)

(1) Five of the eight required courses must be 200-level courses specifically covering topics in computer science. Generally this means they must be offered as courses in Computer Science. In particular, for Computer Science graduate degrees, Applied Computation courses may be counted as 100-level courses, not 200-level courses. The CHD may approve exceptions.

(2) At least one of these five 200-level courses must be in Theory, and one must be in Systems. There is no specific list of Theory and Systems courses; this rule is enforced by the faculty advisors and the CHD. However, in almost all cases, any class with a course number Computer Science 22x is acceptable as a theory course, and any class with a substantial programming-based or hardware-based project component is acceptable as a systems course.

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