

Disclaimer: Each university bulletin covers a 12-month period, July 1 through June 30. Courses, majors, minors, programs, and degrees in this Bulletin are subject to change without notice and may not be available in future bulletins. Every effort has been made to include accurate information in the website. However, the contents of this website are not to be regarded as an irrevocable contract between students and CMU. The university reserves the right to change at any time and without prior notice any provision or requirement, included, but not limited to, policies, procedures, changes, academic programs, and calendar.

2007-2008 : Graduate (Masters/Cert/Spec) : CMU Main Campus

Master of Science in Computer Science

Minimum Total for Graduation: 36 hours

Degree: Master of Science

Program Requirements:

Computer Science

Admission Requirements, Retention & Termination Standards

..... Conditional admission may be granted upon completion of a bachelor's degree, including a two semester sequence in a modern programming language with elementary data structures (CPS 180, CPS 181), from an accredited institution with a minimum overall grade point average of 3.0 in the last two years of study, as well as in the programming courses. International students are required to demonstrate English competency. (See section on English Language Competency in this Bulletin).

Regular admission is granted to students who meet the above conditional requirements and have completed the following or the equivalent:

Assembly Language and Computer Organization (CPS 210)
 Advanced Data Structures and Algorithms (CPS 340)
 Computer Design and Architecture (CPS 360)
 Programming Language Concepts (CPS 450)
 Introduction to Operating Systems (CPS 470)
 Calculus I (MTH 132)
 Discrete Mathematics (MTH 175)

Conditionally admitted students who have not met all these requirements will be required to get the department chairperson's permission to register in each graduate course.

CPS 502 could be taken to satisfy the prerequisite requirements in block structured language with elementary data structures. CPS 503 could be taken to satisfy the prerequisite requirements in assembly language and computer organization, design, and architecture.

Students are required to achieve a minimum grade point average of 2.5 in the above-listed courses.

Required Courses (9 hours)

CPS 542 - Analysis and Design of Algorithms 3(3-0)

..... Models of computation. Analysis of algorithms including computing time and space requirements. Efficient algorithm design techniques. Introduction to parallel algorithms. Prerequisite: CPS 340.

CPS 650 - Theory and Practice of Compiler Construction 3(3-0)

..... Automata theory, context-free languages, syntax analysis and parsing techniques. Semantic processing for structured and/or object-oriented programming languages. Code generation and optimization. Prerequisite: CPS 450 or permission of instructor.

CPS 670 - Operating Systems 3(3-0)

..... Concepts, communication, synchronization, processes, and processors in distribution systems. Distributed file systems. Distributed shared memory systems. Prerequisite: CPS 470.

Other Requirement

..... Select either Plan A or Plan B.

Plan A Requirement (6 hours)

..... The 36-hour requirements include 30 hours of coursework, a Masters thesis of 6 hours (CPS 798), and an oral examination on the thesis. For Masters thesis, a Thesis Committee shall be formed according to the procedure outlined in the Thesis, Field Study, or Dissertation section of College of Graduate Studies Bulletin.

CPS 798 - Thesis 1-6(Spec)

..... CR/NC only. Prerequisites: written permission of advisor and department chairperson.

Plan B Requirement

..... The 36-hour requirements include 36 hours of coursework and a Plan B Project. A student must complete a substantial written report in computer science or an application of computer science for the Plan B project. Copies of procedures for such projects are available from the department chairperson. The project will ordinarily include a significant original programming component with a written defense of the programming component and must include evidence of scholarly and creative ability. The project must be supervised while in progress and approved by a committee of two faculty members.

Electives (21-27 hours)

..... Among the remaining 27 semester hours of electives, at least 21 hours must have the CPS designator. Electives from related areas are selected with approval of the CPS advisor.

..... Total: 36 semester hours

NOTES:

At least 15 semester hours of courses must be at 600-level or above.

A student who satisfied any of the course requirements prior to entering the program may be excused from that course requirement. However, the 36-hour requirement will not be affected.

The Accelerated Master of Science Program in Computer Science

..... Undergraduate students in Computer Science can pursue a Master of Science program in Computer Science while still fulfilling the requirements for their Bachelor's degree. The Accelerated Master's Degree Program (AMDP) which was recently approved at CMU allows students to reduce the total number of credits required to complete their undergraduate and graduate level degrees by applying up to 12 credits (500 and 600 level courses) towards graduation requirements on both degree programs.

Admission Criteria:

To be eligible for the accelerated program, a student must have completed a minimum of 90 credits (including transfer and/or AP credits) towards a Bachelor's degree, including all University Program requirements. An overall grade point average (GPA) of a least 3.25 is required, as well as a minimum of 3.00 in Computer Science course work. In addition, students must satisfy all requirements for regular admission to the Master's program in Computer Science, with the possible exception of completing CPS 450 and 470 courses, which may be completed during the senior year.

During the fourth year, students will complete 12 credits of graduate level course work (excluding independent study credits) that will be counted towards both the undergraduate and graduate degrees. In addition, students will take either CPS 450 and 470 or 6 hours of CPS electives. Other courses may be taken to complete Bachelor of Science degree requirements. Students will complete the course work required for a Master of Science degree and complete either Plan A or Plan B option by the end of the fifth year.

A sample curriculum for a student who has completed 90 credit hours of undergraduate course work is given below:

Sample Curriculum for Plan A or Plan B option:**Year Four**

Fall (15 hours)
CPS 542 (Elective for BS, required for MS) - 3 hours
CPS Elective or CPS 450 - 3 hours
Undergraduate Courses - 9 hours

Spring (15 hours)
CPS Elective or CPS 470 - 3 hours
Other BS Requirement - 3 hours
CPS electives for both BS and MS - 9 hours

Summer (3 hours)
UG Courses - 3 hours (if necessary?)

Year Five

Fall (12 hours)
CPS 670 (required for MS) - 3 hours
Electives for MS* - 9 hours

Spring (12 hours)
CPS 650 (Required for MS) - 3 hours
Electives for MS* - 9 hours

***Note:** Students may complete CPS 798 - 6 hours over the course of two semesters for the MS Plan A Option.