COMPUTER SCIENCE - PROFESSIONAL MASTER OF SCIENCE (MSCPS)

The professional Master of Science in computer science is a degree program that offers possibilities for a wide range of prospective students. Whether a student is a working engineer or an undergraduate considering a career in industry, we have program options to meet their needs.

For more information, visit the department’s Professional MS Degree Program Requirements (http://www.colorado.edu/cs/current-students/graduate-students/ms-degree/professional-ms-degree-requirements) webpage.

Program Tracks
While pursuing the professional MS degree in computer science, students select between two tracks.

General Track
This is a course-based track to earn a professional MS degree in computer science.

Data Science and Engineering (DSE) Track
The Department of Computer Science has embraced this degree as an ideal opportunity to expand the high-quality courses in data science and engineering we have long offered into a wide array of courses leading to a full master’s degree. The goal of our professional MS program is to produce creative, workforce-ready graduates equipped with versatile engineering and data-science skills, and technical leadership.

Adding several new data science and data engineering courses to our program now enables greater options for earning a professional MS degree with a DSE track, while also offering plenty of courses to complete a full master’s degree principally with a DSE focus. Students pursuing this degree will also have access to many excellent graduate-level courses offered by the Computer Science Department’s highly reputed faculty in computer science, data science, data engineering, and more.

Requirements
The following course requirements are subject to change; for the most current information, visit the department’s Professional MS Degree Program Requirements (http://www.colorado.edu/cs/current-students/graduate-students/ms-degree/professional-ms-degree-requirements) webpage.

Students must complete at least 30 credit hours of course work at the 5000 level or above (10 courses). Up to 12 credit hours (4 courses) may be taken outside of the department with the approval of the graduate committee. A thesis is not required for this degree.

All students must earn at least a B (not a B-) or better in their breadth courses. They need to earn at least a C or better in the remaining courses, as long as their cumulative GPA is 3.00 or better.

Breadth Courses
Students must complete one course each in three of the nine different breadth areas: artificial intelligence, computational biology, human-centered computing, numerical & scientific computing, programming languages, software engineering, database systems, systems & networking, and theory of computing.

For a list of breadth courses by category, visit the department’s MS/ME Breadth Requirement (http://www.colorado.edu/cs/current-students/graduate-students/msme-breadth-requirement) webpage.

Program Tracks
Data Science and Engineering (DSE) Track
Students must complete at least 18 credit hours (six courses) in computer science, including three required breadth courses (see above) and four DSE courses (below).

DSE Courses
Data Science Core Courses
Choose one course from the following:  
- CSCI 5622 Machine Learning  
- CSCI 5502 Data Mining  
- CSCI 5654 Linear Programming

Data Engineering Core Courses
Choose one course from the following:  
- CSCI 7000 Current Topics in Computer Science (Data Engineering)  
- CSCI 5253 Datacenter Scale Computing - Methods, Systems and Techniques  
- CSCI 5817 Database Systems  
- CSCI 7000 Current Topics in Computer Science (Big Data)  
- CSCI 7000 Current Topics in Computer Science (Computer Storage Systems)  
- ATLS 5214 Big Data Architecture

General Courses
Choose two courses from the following:  
- Data Science  
  - CSCI 5352 Network Analysis and Modeling  
  - CSCI 7222 Topics in Nonsymbolic Artificial Intelligence (Neural Networks and Deep Learning)  
  - CSCI 5254 Convex Optimization and Its Applications  
  - CSCI 5832 Natural Language Processing  
  - CSCI 5676 Numerical Optimization  
  - CSCI 5722 Computer Vision  

- Data Engineering  
  - CSCI 5576 High-Performance Scientific Computing  
  - CSCI 7000 Current Topics in Computer Science (HCC Big Data Computing)  
  - CSCI 7000 Current Topics in Computer Science (Big Data Analytics: Systems, Algorithms and Applications)

Total Credit Hours 12

The same course may count toward both a breadth and a DSE requirement.

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**General Track**

Students must complete at least 18 credit hours (6 courses) in computer science, including three required breadth courses.

For more information, visit the department's Professional MS Degree Program Requirements (http://www.colorado.edu/cs/current-students/graduate-students/ms-degree/professional-ms-degree-requirements) webpage.