COMPUTER SCIENCE - MASTER OF SCIENCE

The Master of Computer Science degree has two tracks, one with thesis or project track and a course-work only track. For all master's students, the following apply:

- Each master's student must complete 12 credits of **the basic requirements (p. 1)**(see table below).
- Each master's student is expected to register for CSCI classes numbered 5000 or above, except for CSCI 5110 Data Structure and Algorithms Transition or deficiencies which are 46x courses (Transition Courses) or CSCI 4105 Programming Language Structure I or CSCI 4120 Operating Systems I.
- Courses not in Computer Science can be included in the student's program of study only if prior written approval has been obtained from the student's advisor and the departmental Graduate Committee. Further details can be found in the on-line Graduate Handbook (https://computerscience.nmsu.edu/).
- **For Thesis/Project track's students**: each student following this track needs to complete the following three requirements:
  - ***Courses***: each student *needs to take*, in addition to the basic requirement, **15 credits** of Computer Science graduate courses (courses numbered > 5000) with the following restrictions:
    - One course can only be used to satisfy one requirement (e.g., if CSCI 5510 Automata, Languages, Computability is used to satisfy the requirement for the **Theories** category, it cannot be counted towards satisfying the requirements on ***Courses***).
    - At most 6 credits of CSCI 5996 Special Topics with different topics (i.e., with different subtitles) can be counted towards the degree program of the student.
    - At most 6 credits of CSCI 5991 Special Research Problems can be counted towards the degree program of the student.
    - No credit of course numbered > 5999 can be counted towards the degree program.
  - ***Thesis/Project***: each student *must write a thesis* (CSCI 5999 Master's Thesis) or *undertake a research project* (CSCI 5994 Master's Project) for **6 credits**.
  - ***Master Final Exam***: each student *is required to sustain a final exam,* covering the thesis/research project and the graduate course-work. The two parts of the exam bring equal weight.
- **For Course-Work Only track's students:** Each student following this track needs to take, in addition to the basic requirement, **24 credits** of Computer Science graduate courses (courses numbered > 5000) with the following restrictions:
  - One course can only be used to satisfy one requirement (e.g., if CSCI 5510 Automata, Languages, Computability is used to satisfy the requirement for the **Theories** category, it cannot be counted towards satisfying the requirements on **Courses**).
  - At most 6 credits of CSCI 5996 Special Topics with different topics (i.e., with different subtitles) can be counted towards the degree program of the student.
  - No credit of course numbered > 5888 can be counted towards the degree program.

Basic Requirements

Prefix	Title	Credits
Basic		**3**
CSCI 5110	Data Structure and Algorithms Transition [1]	
or CSCI 5505	Analysis of Algorithms	
Theories		**3**
CSCI 5510	Automata, Languages, Computability	
CSCI 5505	Analysis of Algorithms	
CSCI 5860	Algorithms in Systems Biology	
Systems		**3**
CSCI 5605	Operating Systems II	
CSCI 5820	Database Management Systems II	
CSCI 5840	Computer Networks II	
Applications		**3**
CSCI 5410	Computer Graphics I	
CSCI 5415	Introduction to Data Mining	
CSCI 5310	Bioinformatics Programming	
CSCI 5205	Computer Security	
CSCI 5210	Introduction to Smart Grids	
CSCI 5250	Human-Centered Computing	
CSCI 5305	Bioinformatics	
CSCI 5255	Digital Game Design	
CSCI 5260	Visual Programming	
CSCI 5420	Applied Machine Learning I	
CSCI 5215	Parallel Programming	
CSCI 5220	Cloud and Edge Computing	
CSCI 5225	Introduction to Cryptography	
CSCI 5265	Modern Web Technologies	
CSCI 5425	Introduction to Deep Learning	
CSCI 5430	Graph Data Mining	
CSCI 5240	Software Reverse Engineering	
CSCI 5435	Text Mining and Natural Language Processing	
CSCI 5235	Cellular Networks and Mobile Computing	
CSCI 5440	Generative Artificial Intelligence	
CSCI 5750	Artificial Intelligence II	
CSCI 5810	Advanced Software Engineering	
Total Credits		**12**

[1] Students who earned a B (or better) in CSCI 3720 Data Structures and Algorithms are not required to take this course.

A roadmap for a student without deficiencies study can be as follows:

- **First semester**: CSCI 5110 Data Structure and Algorithms Transition and two elective courses (courses > 5000 but not in the **theories** or **systems** group) .
- **Second semester**: take one course in the basic requirements (**theories** or **systems** or **application** group) and two elective courses.
- **Third semester**: take one course in the basic requirements (**theories** or **systems** or **application** group) and one elective course and a thesis/project course.
- **Fourth semester**: take one course in the basic requirements (**theories** or **systems** or **application** group) and a thesis/project course.

For **course work only option,** the student should replace the thesis/project course with an elective course and add an additional elective course to the last semester.

First Year		
Semester 1		**Credits**
CSCI 5110	Data Structure and Algorithms Transition	3
Elective Course 1		3
Elective Course 2		3
	Credits	**9**
Semester 2		
Theories/Systems/Applications 1		3
Elective 3		3
Elective 4		3
	Credits	**9**
Semester 3		
Theories/Systems/Applications 2		3
Elective 5		3
CSCI 5994 or CSCI 5994	Master's Project or Master's Project	3
	Credits	**9**
Semester 4		
Theories/Systems/Applications 3		3
CSCI 5999 or CSCI 5994	Master's Thesis or Master's Project	3
	Credits	**6**
	Total Credits	**33**

Master Accelerated Program

New Mexico State University master's accelerated program provides the **opportunity for academically qualified undergraduate students** to begin working on a master's degree **during their junior and senior years** while completing a bachelor's degree. Typically, a bachelor's degree requires four years to complete, and a master's degree requires an additional two years. The master's accelerated programs allow students the opportunity to complete a graduate program in an accelerated manner. Students can take up to 12 credits of Computer Science graduate courses and get dual course credit that can be applied to both an undergraduate and master's degree. Additional information can be found in the NMSU catalog.

MAP Admission

1. First, students will apply to the Computer Science department to receive approval for the MAP program. The student submits the pre-application when he/she is within 48 credits of earning a BS in Computer Science; an application form is provided on the department website. Qualification for the MAP program will be based on the cumulative (non-grade replaced) grade point average in Computer Science and Math courses taken up to that point (at least 3.3), including at least two of the following: CSCI 3730 Compilers and Automata Theory, CSCI 3710 Software Development and CSCI 3720 Data Structures and Algorithms , and recommendations by faculty members listed on the departmental application. Additional factors might be taken into account when available (e.g., GRE scores). Students having a grade point average below 3.3 but at least 2.75 may be admitted to MAP on a case-by-case basis, depending on faculty recommendations and evaluations of the individual academic and professional history.
2. Once the Computer Science department has notified the applicant of acceptance in MAP, the applicant must then formally apply to the graduate school (https://apply.nmsu.edu/apply/?id=1c3c41ea-b5f9-48ef-83c3-b085794ba277) for formal admission to the graduate program. This application to the graduate school is made during the semester of graduation from the BS in Computer Science.

Computer Science Courses Eligible for MAP

All courses in the Computer Science program that are cross-listed for undergraduate and graduate studies in the catalog are eligible for MAP. Students must receive a grade of B or higher in this coursework to be counted for graduate credits. If a grade of B- or lower is earned, it will not count toward the graduate degree. The courses are listed below.

Student should take four MAP eligible courses and CSCI 3720 Data Structures and Algorithms in their BS study program and earned a B (or better) grade. A roadmap for the last year of their study can be as follows:

- **First semester**: take two courses in the basic requirements and a master thesis/project course.
- **Second semester**: take the remaining courses in the basic requirements and a master thesis/project course. Add an elective course if necessary.

Prefix	Title	Credits
CSCI 5110	Data Structure and Algorithms Transition	3
CSCI 5140	Database Management Systems I	3
CSCI 5205	Computer Security	3
CSCI 5206	Hardware Security	3
CSCI 5210	Introduction to Smart Grids	3
CSCI 5215	Parallel Programming	3
CSCI 5220	Cloud and Edge Computing	3
CSCI 5225	Introduction to Cryptography	3
CSCI 5235	Cellular Networks and Mobile Computing	3
CSCI 5245	Computer Networks I	3
CSCI 5240	Software Reverse Engineering	3
CSCI 5250	Human-Centered Computing	3
CSCI 5255	Digital Game Design	3
CSCI 5260	Visual Programming	3
CSCI 5265	Modern Web Technologies	3
CSCI 5305	Bioinformatics	3
CSCI 5310	Bioinformatics Programming	3
CSCI 5405	Artificial Intelligence I	3
CSCI 5410	Computer Graphics I	3
CSCI 5415	Introduction to Data Mining	3
CSCI 5420	Applied Machine Learning I	3
CSCI 5425	Introduction to Deep Learning	3
CSCI 5430	Graph Data Mining	3
CSCI 5435	Text Mining and Natural Language Processing	3
CSCI 5440	Generative Artificial Intelligence	3
CSCI 5505	Analysis of Algorithms	3
CSCI 5510	Automata, Languages, Computability	3
CSCI 5996	Special Topics	1-6