

COMPUTER SCIENCE (M.S.)

Requirements

Background courses

Students with insufficient background for graduate-level computer science courses may need to take background coursework. Credits do not apply toward the M.S. program. Students entering the program without an undergraduate degree in computer science may need to take one or more of the following, depending on their background:

Course	Title	Credits
CISC 5002	Discrete Structures	3
CISC 5004	Computer Programming C++	3
CISC 5006	Data Structures	3
CISC 5008	Computer Organization	3

Degree Requirements

The master's degree requires 30 credits of coursework beyond the bachelor's degree, which includes 24 credits of coursework and six credits of a culminating project. It can be completed by a full-time student in three or four semesters.

A "B" average (3.000) must be maintained in courses taken for the master's degree.

Course	Title	Credits
Foundation Courses		
CISC 5825 or CISC 6890	Computer Algorithms ¹ Advanced Computer Algorithms	3
CISC 5200	Computer Language Theory ²	3
	One Software thematic cluster course ³	3
	One Software or Networks and Systems thematic cluster course ³	3
CISC 5325	Database (or one Networks and Systems thematic cluster course) ^{3,4}	3
CISC 5595	Operating Systems (or one Networks and Systems thematic cluster course) ^{3,5}	3
Electives		
	Two courses from any of the five thematic clusters: ³	6
	Software	
	Networks and Systems	
	Artificial Intelligence	
	Data Analytics	
	Cybersecurity	
Capstone or Thesis (one of the below options)		
	Thesis Paper & Research	6
CISC 6098	M.S. Computer Science Thesis I	
CISC 6099	M.S. Computer Science Thesis II	
	Elective Course and Capstone	
	One additional elective course from any of the five thematic clusters ³	
CISC 6597	Capstone Project in Computer Science	
Total Credits		30

¹ Students who have not taken an undergraduate or graduate-level algorithms course should take CISC 5825 Computer Algorithms. Other students can take CISC 6890 Advanced Computer Algorithms, or (with permission of the program director) substitute another Software Thematic Cluster course.

² Students who have taken an undergraduate course similar to CISC 5200 Computer Language Theory may substitute any Software Thematic Cluster course, with the permission of the program director.

³ A list of courses for each thematic cluster can be found on the Thematic Clusters page (p. 1).

⁴ Students who have not taken an equivalent undergraduate or graduate course should take CISC 5325 Database.

⁵ Students who have not taken an equivalent undergraduate or graduate course should take CISC 5595 Operating Systems.

CIP Code

11.0101 - Computer and Information Sciences, General.

You can use the CIP code to learn more about career paths associated with this field of study and, for international students, possible post-graduation visa extensions. Learn more about CIP codes and other information resources.

Thematic Clusters

Software thematic cluster courses

Courses in this group have the CSSO attribute.

Course	Title	Credits
CISC 5030	Internet and Web Programming	3
CISC 5040	JavaScript	3
CISC 5350	Financial Programming	3
CISC 5410	Mobile Device Programming	3
CISC 5520	Programming Languages	3
CISC 5850	The Social Network	3
CISC 6100	Software Engineering	3
CISC 6300	Computational Finance	3
CISC 6350	Advanced Financial Programming	3
CISC 6352	Advanced Computational Finance	3
CISC 6375	Object Software Design	3
CISC 6400	Robotics and Animation	3
CISC 6795	Java Programming	3
CISC 6875	Parallel Computations	3
CISC 6890	Advanced Computer Algorithms	3

Networks and Systems thematic cluster courses

Courses in this group have the CSNS attribute.

Course	Title	Credits
CISC 5030	Internet and Web Programming	3
CISC 5410	Mobile Device Programming	3
CISC 5550	Cloud Computing	3
CISC 5597	Distributed Systems	3
CISC 5640	Nosql Database Systems	3

CISC 5725	Network Administration	3
CISC 5728	Security of e-Systems and Networks	3
CISC 6630	Wireless Security	3
CISC 6680	Intrusion Detection and Network Forensics	3
CISC 6725	Computer Networks	3
CISC 6735	Wireless Networks	3
CISC 6750	IOT Forensics and Security	3
CISC 6880	Blockchain Technology	3
CISC 6935	Advanced Distributed Systems	3

Artificial Intelligence thematic cluster courses

Courses in this group have the CSAI attribute.

Course	Title	Credits
CISC 5109	Big Data Analytics	3
CISC 5700	Cognitive Computing	3
CISC 5800	Machine Learning	3
CISC 5900	Information Fusion	3
CISC 6000	Deep Learning	3
CISC 6210	Natural Language Processing	3
CISC 6400	Robotics and Animation	3
CISC 6525	Artificial Intelligence	3
CISC 6550	Systems Neuroscience	3

Data Analytics thematic cluster courses

Courses in this group have the CSDA attribute.

Course	Title	Credits
CISC 5109	Big Data Analytics	3
CISC 5352	Machine Learning in Finance	3
CISC 5450	Mathematics for Data Science	3
CISC 5640	Nosql Database Systems	3
CISC 5700	Cognitive Computing	3
CISC 5790	Data Mining	3
CISC 5800	Machine Learning	3
CISC 5850	The Social Network	3
CISC 5900	Information Fusion	3
CISC 5950	Big Data Computing	3
CISC 6000	Deep Learning	3
CISC 6500	Bioinformatics	3
CISC 6550	Systems Neuroscience	3
CISC 6625	Educational Data Mining and Learning Analytics	3
CISC 6700	Medical Informatics	3
CISC 6745	Data Visualization	3

Cybersecurity thematic cluster courses

Courses in this group have the CSCY attribute.

Course	Title	Credits
CISC 5009	Network Essentials	3
CISC 5650	Cybersecurity Essentials	3

CISC 5660	Data Science for Cybersecurity	3
CISC 5725	Network Administration	3
CISC 5728	Security of e-Systems and Networks	3
CISC 5750	Information Security and Ethics	3
CISC 5770	Intelligence in Cybersecurity	3
CISC 6070	Red Teaming	3
CISC 6600	Cloud Computing Security	3
CISC 6630	Wireless Security	3
CISC 6640	Privacy and Security in Big Data	3
CISC 6650	Forensic Computing	3
CISC 6660	Applied Cryptography	3
CISC 6670	Artificial Intelligence for Cybersecurity	3
CISC 6680	Intrusion Detection and Network Forensics	3
CISC 6690	Cybersecurity in Business	3
CISC 6750	IOT Forensics and Security	3
CISC 6800	Malware Analytics and Software Security	3
CISC 6920	Incident Response and Risk Management	3
CISC 7050	Penetration Testing	3