MASTER OF COMPUTER SCIENCE

Computer science is at the center of our increasingly digital world. This professional master's degree program in computer science will prepare you for a career in the ever-evolving tech landscape. The program consists of 30 credit hours of coursework in computer science and is designed for those without a prior degree in computer science, or those who are primarily interested in a (non-thesis) program preparing them for careers as working computer science professionals in business and industry. A full-time student with a background in computer science enrolled in the program should be able to complete the requirements in one to one-and-a-half years. Optional specializations in a number of areas are available.

Curriculum

The Master of Computer Science degree program requires a core curriculum of nine credit hours and 21 credit hours of elective courses. At least 20 credit hours must come from 500-level CS/CSP courses.

Requirement	Credits
Minimum Degree Credits	30
Minimum Core Course Credits	9
Minimum 500-Level CS/CSP Credits	20

Code	Title	Credit Hours
Programming Core Courses		**(3)**
Select a minimum of one course from the following:		3
CS 511	Topics in Computer Graphics	3
CS 512	Computer Vision	3
CS 525	Advanced Database Organization	3
CS 540	Syntactic Analysis of Programming Languages	3
CS 541	Topics in Compiler Construction	3
CS 546	Parallel and Distributed Processing	3
CS 551	Operating System Design and Implementation	3
CS 553	Cloud Computing	3
Systems Core Courses		**(3)**
Select a minimum of one course from the following:		3
CS 542	Computer Networks I: Fundamentals	3
CS 544	Computer Networks II: Network Services	3
CS 547	Wireless Networking	3
CS 550	Advanced Operating Systems	3
CS 555	Analytic Models and Simulation of Computer Systems	3
CS 570	Advanced Computer Architecture	3
CS 586	Software Systems Architectures	3
CS 543	Software-Defined Networking	3
Theory Core Courses		**(3)**
Select a minimum of one course from the following:		3
CS 530	Theory of Computation	3
CS 533	Computational Geometry	3
CS 534	Types and Programming Languages	3
CS 535	Design and Analysis of Algorithms	3
CS 536	Science of Programming	3
CS 538	Combinatorial Optimization	3
CS 539	Game Theory: Algorithms and Applications	3
Elective Courses		**(21)**
Select 21 credit hours		21
Total Credit Hours		**30**

Notes:
- All core and specialization courses must be satisfied by courses taken at Illinois Institute of Technology. Courses transferred for credit cannot be used to satisfy core or specialization course requirements. Core course credit does apply toward the 20-credit hour requirement for CS/CSP courses.
- Elective credit may include 400- and 500-level CS and CSP courses, certain courses transferred from other departments, and up to six credit hours of accelerated courses. Interprofessional Projects (IPROs) and deficiency courses (CS 201, CS 401, CS 402, and Calculus) cannot be included. There is a limit of six CS 597 credits. Consult the computer science department website (science.iit.edu/computer-science) for details.
- Certain specializations have program requirements different from those above. See the Specializations tab on this page for more details.

Master of Computer Science with Specialization in Business

33 credit hours

This program is designed to help computer science professionals extend and deepen their technical and practical knowledge of the field while introducing themselves to core topics in modern business practices. Students must satisfy the general Master of Computer Science requirements, and complete 24 credit hours of CS/CSP courses and three specialization courses from the Stuart School of Business.

Code	Title	Credit Hours
Specialization Courses		**(9)**
Select a minimum of three courses from the following:		9
BUS 510	Strategic Management	3
BUS 550	Business Statistics	3
MBA 501	Financial Statement Applications	3
MBA 502	International Trade	3
MBA 504	Analytics for Decision Making	3
MBA 506	Leadership and Organization Design	3
MBA 509	Financial Management	3
MBA 511	Marketing Strategy	3
Total Credit Hours		**9**

Note: Stuart School of Business tuition and fees apply to these courses. Applicants to the program are not required to take the GMAT. Students who have already taken Stuart School of Business courses as part of a degree program cannot reuse those courses to satisfy specialization course requirements.

Master of Computer Science with Specialization in Artificial Intelligence

30 credit hours

This program is intended for students who are interested in ways in which computers may learn and adapt based on data so as to solve complex problems in various areas of computer science. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(12)**
Select a minimum of four courses from the following:		12
CS 480	Introduction to Artificial Intelligence	3
CS 512	Computer Vision [1]	3
CS 522	Advanced Data Mining	3
CS 577	Deep Learning	3
CS 578	Interactive and Transparent Machine Learning	3
CS 579	Online Social Network Analysis	3
CS 583	Probabilistic Graphical Models	3
CS 584	Machine Learning	3
CS 585	Natural Language Processing	3
CS 581	Advanced Artificial Intelligence	3
Total Credit Hours		**12**

[1]   CS 512 serves simultaneously as a specialization and a Programming core course.

Master of Computer Science with Specialization in Cyber-Physical Systems

30 credit hours

This program is intended for students who are interested in learning how to work with embedded controllers with integrated sensors and networking abilities and to utilize them for real-world applications. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(12)**
Select a minimum of four courses from the following:		12
CS 442	Mobile Applications Development	3
CS 552	Distributed Real-Time Systems	3
CS 553	Cloud Computing [1]	3
CS 555	Analytic Models and Simulation of Computer Systems [1]	3
CS 556	Cyber-Physical Systems: Languages and Systems	3
CS 557	Cyber-Physical Systems Security and Design	3
CS 558	Advanced Computer Security	3
CSP 544	System and Network Security	3
Total Credit Hours		**12**

[1]   CS 553 serves simultaneously as a specialization course and a Programming core course. CS 555 serves simultaneously as a specialization course and a Systems core course.

Master of Computer Science with Specialization in Data Analytics

30 credit hours

Intelligent analysis of large amounts of data is a crucial component in supporting business decisions. This program is intended for students interested in learning how to discover patterns in large amounts of data in information systems and how to use these to draw conclusions. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(12)**
Select a minimum of four courses from the following:		12
CS 422	Data Mining	3
CS 520	Data Integration, Warehousing, and Provenance	3
CS 522	Advanced Data Mining	3
CS 554	Data-Intensive Computing	3
CS 579	Online Social Network Analysis	3
CS 584	Machine Learning	3
CS 585	Natural Language Processing	3
CS 512	Computer Vision	3
CS 528	Data Privacy and Security	3
CS 429	Information Retrieval	3
CSP 571	Data Preparation and Analysis	3
CSP 554	Big Data Technologies	3
Total Credit Hours		**12**

Master of Computer Science with Specialization in Database Systems

30 credit hours

This program is designed to provide in-depth knowledge of the principles of design and development of database systems. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(12)**
Select a minimum of four courses from the following:		12
CS 425	Database Organization	3
CS 520	Data Integration, Warehousing, and Provenance	3
CS 522	Advanced Data Mining	3
CSP 554	Big Data Technologies	3
CS 525	Advanced Database Organization [1]	3
CS 529	Information Retrieval	3
CS 553	Cloud Computing [1]	3
CS 554	Data-Intensive Computing	3
Total Credit Hours		**12**

[1]   CS 525 and CS 553 serve simultaneously as specialization courses and Programming core courses.

Master of Computer Science with Specialization in Distributed and Cloud Computing

30 credit hours

The Master of Computer Science with a Specialization in Distributed and Cloud Computing is intended for students who are interested to learn about distributed systems and how they are applied to real world problems, as well as how emerging cloud computing technologies can be used to implement some of the world's most popular services and applications. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(15)**
Select a minimum of four courses from the following:		12
CS 451	Introduction to Parallel and Distributed Computing	3
CS 546	Parallel and Distributed Processing [1]	3
CS 550	Advanced Operating Systems [1]	3
CS 552	Distributed Real-Time Systems	3
CS 553	Cloud Computing [1]	3
CS 554	Data-Intensive Computing	3
CS 570	Advanced Computer Architecture [1]	3
CS 543	Software-Defined Networking	3
CSP 554	Big Data Technologies	3
Total Credit Hours		**15**

[1]   CS 546 and CS 553 both serve simultaneously as specialization courses and Programming core courses. CS 550 and CS 570 both serve simultaneously as specialization courses and Systems core courses.

Master of Computer Science with Specialization in Finance

33 credit hours

The Master of Computer Science with a Specialization in Finance is designed to enable computer science students to further their technical education while opening a path toward a career in finance.

Courses for the MCS/Finance degree program are taken from the Department of Computer Science and the Stuart School of Business. In addition to satisfying the general Master of Computer Science degree requirements, students must complete 24 credit hours of CS/CSP courses and three specified MSF courses.

Code	Title	Credit Hours
Required Finance Courses		**(9)**
MSF 504	Valuation and Portfolio Management	3
MSF 505	Futures, Options, and OTC Derivatives	3
MSF 506	Financial Statement Analysis	3
Total Credit Hours		**9**

Note: Stuart School of Business tuition and fees apply to these courses. Applicants to the program are not required to take the GMAT. Students who have already taken Stuart School of Business courses as part of a degree program cannot reuse those courses to satisfy specialization course requirements.

Master of Computer Science with Specialization in Information Security and Assurance

30 credit hours

Information security, privacy, and information assurance are of prime importance in modern computer systems where data can be accessed from nearly everywhere. The Master of Computer Science with a Specialization in Information Security and Assurance is intended for students interested in aspects of security and assurance in modern e-commerce applications. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

The U.S. government's Information Assurance Courseware Evaluation (IACE) program has certified the computer science department's courses as meeting the national training standards for Information Systems Security Professionals (NSTISSI 4011) and Systems Certifiers (NSTISSI 4015). These standards describe course content for studying telecommunications security and automated information systems security.

Code	Title	Credit Hours
Specialization Courses		**(12)**
Select a minimum of four of the following courses:		12
CS 458	Introduction to Information Security	3
CS 525	Advanced Database Organization [1]	3
CS 528	Data Privacy and Security	3
CS 549	Cryptography and Network Security	3
CS 550	Advanced Operating Systems [1]	3
CS 558	Advanced Computer Security	3
CSP 544	System and Network Security	3
Total Credit Hours		**12**

[1] CS 525 serves simultaneously as a specialization course and a Programming core course. CS 550 serves simultaneously as a specialization course and a Systems core course.

Master of Computer Science with Specialization in Networking and Communications

30 credit hours

This program is designed to provide an in-depth knowledge of the theory and practice of computer networking and telecommunications. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(15)**
Select a minimum of four courses from the following:		12
CS 455	Data Communications	3
CS 542	Computer Networks I: Fundamentals [1]	3
CS 544	Computer Networks II: Network Services [1]	3
CS 547	Wireless Networking [1]	3
CS 548	High-Speed Networks	3
CS 549	Cryptography and Network Security	3

Code	Title		Credit Hours
CS 555	Analytic Models and Simulation of Computer Systems [1]	3	
CS 557	Cyber-Physical Systems Security and Design	3	
CSP 544	System and Network Security	3	
CS 543	Software-Defined Networking		3
Total Credit Hours			**15**

[1]   CS 542, CS 544, CS 547, and CS 555 all serve simultaneously as specialization courses and Systems core courses.

Master of Computer Science with Specialization in Software Engineering

30 credit hours

This program is designed to provide an in-depth knowledge of theory and practices in software engineering, including hands-on experience in software design, development, and maintenance. Students must satisfy general Master of Computer Science requirements and complete four specialization courses.

Code	Title	Credit Hours
Specialization Courses		**(12)**
Select a minimum of four courses from the following:		12
CS 487	Software Engineering I	3
CS 521	Object-Oriented Analysis and Design	3
CS 536	Science of Programming [1]	3
CS 537	Software Metrics	3
CS 586	Software Systems Architectures [1]	3
CS 587	Software Project Management	3
CS 589	Software Testing and Analysis	3
CSP 587	Software Quality Management	3
Total Credit Hours		**12**

[1]   CS 536 serves simultaneously as a specialization course and a Theory core course. CS 586 serves simultaneously as a specialization course and a Systems core course.