

COMPUTER SCIENCE - M.S.

College of Sciences and Humanities
Department of Computer Science
www.kent.edu/cs

About This Program

Advance your expertise in computing with Kent State's Computer Science M.S., where a rigorous curriculum blends theory and real-world application across areas like software engineering, data science and cybersecurity. Gain hands-on research experience and tailor your path with thesis or non-thesis options, preparing you to solve complex technological challenges and thrive in high-demand industries or doctoral study. Read more...

Contact Information

- **Hassan Peyravi** | gradinfo@cs.kent.edu | 330-672-9047
- Connect with an Admissions Counselor

Program Delivery

- **Delivery:**
 - In person
- **Location:**
 - Kent Campus

Examples of Possible Careers and Salaries*

Computer science teachers, postsecondary

- 2.6% slower than the average
- 38,500 number of jobs
- \$85,540 potential earnings

Computer and information systems managers

- 10.4% much faster than the average
- 461,000 number of jobs
- \$151,150 potential earnings

Information security analysts

- 31.2% much faster than the average
- 131,000 number of jobs
- \$103,590 potential earnings

Computer and information research scientists

- 15.4% much faster than the average
- 32,700 number of jobs
- \$126,830 potential earnings

Computer network support specialists

- 6.4% faster than the average
- 195,100 number of jobs
- \$65,450 potential earnings

Database administrators and architects

- 9.7% much faster than the average
- 132,500 number of jobs
- \$98,860 potential earnings

Computer programmers

- -9.4% decline
- 213,900 number of jobs
- \$89,190 potential earnings

Software developers and software quality assurance analysts and testers

- 21.5% much faster than the average
- 1,469,200 number of jobs
- \$110,140 potential earnings

* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

For more information about graduate admissions, visit the graduate admission website. For more information on international admissions, visit the international admission website.

Admission Requirements

- Bachelor's degree from an accredited college or university
- Minimum 3.000 undergraduate GPA on a 4.000-point scale
- Successful completion of high-level algebra, geometry and calculus coursework (equivalent to MATH 12002, MATH 12003 and MATH 21001)¹
- Official transcript(s)
- GRE scores
- Résumé
- Goal statement
- Three letters of recommendation
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions to waive) by earning one of the following:²
 - Minimum 71 TOEFL iBT score
 - Minimum 6.0 IELTS score
 - Minimum 50 PTE score
 - Minimum 100 DET score

¹ Applicants are strongly recommended to have completed coursework in computer science, including programming, data structures, abstraction, operating systems, combinatorial analysis and discrete structures (equivalent to CS 13001, CS 23001, CS 23022, CS 33211, CS 35101 and CS 46101). Highly qualified students lacking preparation in certain standard areas may be admitted.

² International applicants who do not meet the above test scores may be considered for conditional admission.

Application Deadlines

- **Fall Semester**
 - Application deadline: June 15
- **Spring Semester**
 - Application deadline: November 1
- **Summer Term**
 - Application deadline: April 1

All application materials (including applicable fee, transcripts, recommendation letters, etc.) submitted after these deadlines will be considered on a space-available basis.

Program Requirements

Major Requirements

Code	Title	Credit Hours
Major Requirements		
CS 63005	ADVANCED DATABASE SYSTEMS DESIGN ¹	3
or CS 63901	SOFTWARE ENGINEERING METHODOLOGIES	
CS 63201	ADVANCED OPERATING SYSTEMS ¹	3
or CS 65101	ADVANCED COMPUTER ARCHITECTURE	
CS 66101	ADVANCED TOPICS IN ALGORITHMS	3
CS 69191	MASTER'S SEMINAR	2
Computer Science (CS) Graduate Elective (50000 level or higher)		
<i>Culminating Requirement</i>		
Choose from the following:		
6		
Thesis Option		
CS 69199	THESIS I ²	
Project Option		
CS 69099	CAPSTONE PROJECT	
CS 69192	GRADUATE INTERNSHIP	
or CS 69995	SPECIAL TOPICS IN COMPUTER SCIENCE	
Additional Requirements or Concentrations		
Choose from the following:		
12		
Additional Requirements for Students Not Declaring a Concentration		
Computational Data Science Concentration		
Computer Engineering Concentration		
Computer Security Concentration		
Minimum Total Credit Hours:		
32		

¹ Courses taken for the core cannot be counted again as an elective or concentration course. The list of courses offered each semester, including department-approved special topics, is available in the department's graduate office.

² Students selecting the thesis option must form a master's thesis committee, which will include the advisor and at least two other graduate faculty members. The thesis topic and committee must be approved by the advisor and graduate coordinator. The final version of the thesis must be approved by the advisor, thesis committee and graduate coordinator. Students must continually register for CS 69199 for maximum 6 credit hours toward the degree. Students may need to register for CS 69299 to complete the thesis requirement; however, those credit hours do not, whatsoever, count toward the degree.

Additional Requirements for Students Not Declaring a Concentration

Code	Title	Credit Hours
Major Requirements		
Computer Science (CS) Graduate Electives (50000 level or higher)		12
Minimum Total Credit Hours:		12

Computational Data Science Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements		
Concentration Electives, choose from the following:		12
CS 54001	COMPUTER SCIENCE III - PROGRAMMING PATTERNS	
CS 54201	ARTIFICIAL INTELLIGENCE	
CS 54202	MACHINE LEARNING AND DEEP LEARNING	
CS 63005	ADVANCED DATABASE SYSTEMS DESIGN	
CS 63015	DATA MINING TECHNIQUES	
CS 63016	BIG DATA ANALYTICS	
CS 63018	PROBABILISTIC DATA MANAGEMENT	
Minimum Total Credit Hours:		12

Computer Engineering Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements		
Concentration Electives, choose from the following:		12
CS 53301	SOFTWARE DEVELOPMENT FOR ROBOTICS	
CS 53302	ALGORITHMIC ROBOTICS	
CS 53303	INTERNET OF THINGS	
CS 53305	ADVANCED DIGITAL DESIGN	
CS 53334	HUMAN-ROBOT INTERACTION	
CS 63201	ADVANCED OPERATING SYSTEMS	
CS 63305	MULTICORE COMPUTING	
CS 65101	ADVANCED COMPUTER ARCHITECTURE	
CS 65202	ADVANCED COMMUNICATION NETWORKS	
CS 65203	WIRELESS AND MOBILE COMMUNICATION NETWORKS	
Minimum Total Credit Hours:		12

Computer Security Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements		
Concentration Electives, choose from the following:		12
CS 53202	SYSTEMS ADMINISTRATION	
CS 53203	SYSTEMS PROGRAMMING	
CS 55203	COMPUTER NETWORK SECURITY	
CS 57205	INFORMATION SECURITY	
CS 57206	DATA SECURITY AND PRIVACY	
CS 57207	DIGITAL FORENSICS	
CS 57221	INTRODUCTION TO CRYPTOLOGY	
Minimum Total Credit Hours:		12

Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
-	3.000

- Maximum 12 credit hours of 50000-level courses may be applied toward the degree.
- CS 61002, CS 61003 and CS 61004 may not be used to fulfill degree requirements.
- No more than one-half of a graduate student's coursework may be taken in 50000-level courses.
- Grades below C are not counted toward completion of requirements for the degree.

Program Learning Outcomes

Graduates of this program will be able to:

1. Demonstrate breadth-of-knowledge and understanding of essential facts, concepts, principles and theories relating to advanced topics in computer science.
2. Conduct literature searches, comprehend advanced research materials and uncover connections between related work and critical evaluation and synthesis.
3. Perform research, discovery and integration by applying advanced knowledge of computer science.

Full Description

The Master of Science degree in Computer Science provides students with an educational and research environment to develop career paths through necessary training with emerging technologies. Graduates have the technical knowledge and skills necessary for success within the information and high technology industries.

The M.S. degree in Computer Science has two culminating options: thesis or non-thesis. Students planning to pursue a Ph.D. degree an/or academic research should select the thesis option. Students planning to pursue applied research and development in industry may select the non-thesis option. The thesis option requires original research and a written thesis. The non-thesis option requires a capstone project and an optional industrial internship.

The Computer Science major includes the following optional concentrations:

- The **Computational Data Science** concentration prepares students to process big data. In a spectrum of real-world applications, the collected data (from such sources as mobile devices, GPS, sensor/RFID networks, Internet, social media, etc.) is so large and complex, the traditional data processing tools cannot efficiently and effectively handle it. This concentration focuses on algorithms development, machine learning, computation techniques, network and computing infrastructure and software.
- The **Computer Engineering** concentration prepares students to meet the need of computer engineering professionals in the industry for designing and managing emerging smart devices and computer-integrated physical systems with programmable intelligence. Students learn the hardware-software co-design principles and theory, architecture of the associated software and hardware, devices and sensors communication protocols and the interfaces to effectively

design, build and evolve such smart devices and computer-driven intelligent physical systems.

- The **Computer Security** concentration exposes students to a wide range of topics on the security of computer systems. Students study the vulnerabilities in software and networks and develop algorithms and software to protect data, using digital encryption coding, protected databases and protected computer networking techniques.

Students opting to not pursue a concentration will create an individualized plan of study with their advisor.