Computer Science (MS)
Distance Graduate Degree Program
Department of Computer Science

Program Description
Missouri University of Science and Technology's master's degree in computer science offers emphasis areas in critical infrastructure protection and software engineering. Critical infrastructure protection is a multi-disciplinary study dedicated to improving the security, reliability, and survivability of the nation's infrastructure. Software engineering specializes in software quality, software testing, hardware/software co-design, and formal methods of software specification and verification, software requirements engineering and software process improvement and algorithm theory.

Credit Hours to Complete: A total of 31 credit hours of coursework is required to complete this degree. This includes a one (1) hour seminar course. For students interested in the thesis option, six of the total credit hours must be in research.

Course Length: 16 weeks.

Delivery Format: Courses are delivered over the Internet, via live streaming video; collaborative learning software includes WebEx and Blackboard; classes are archived online for review and easy access.

Course Management Software: Blackboard.

Admission Requirements
Bachelor's degree in related discipline, GPA ≥ 3.0 or 12 hours of graduate credit in computer science; GRE V ≤ 144 (370 on old scale); GRE Q ≥ 155 (700 on old scale); WR ≥ 4.0; International requirement: TOEFL ≥ 570, CBT ≥ 230 or IBT ≥ 89.

Department Contact Information
Graduate Coordinator
Computer Science
Missouri University of Science and Technology
325 Computer Science Bldg.
500 W. 15th St.
Rolla, MO 65409-0350
Phone: 573-341-6642
Email: csgradcoord@mst.edu
Web: http://cs.mst.edu/

For more information —
distance.mst.edu
global@mst.edu
Toll Free: 1-877-678-1870
Computational Intelligence
(Shared with Systems Engineering and Computer Engineering)
This graduate certificate program provides practicing engineers the opportunity to develop the necessary skills in the use and development of computational intelligence algorithms based on evolutionary computation, neural networks, fuzzy logic, and complex systems theory. Engineers can also learn how to integrate common sense reasoning with computational intelligence elective courses such as data mining and knowledge discovery.

Curriculum:*
The certificate program consists of four courses, two core courses and two elective courses.

Core Courses:
- COMP ENG 358/ ELEC ENG 367/ SYS ENG 367 Computational Intelligence

And select one of the following:
- COMP SCI 347 Introduction to Artificial Intelligence
- COMP SCI 348 Evolutionary Computing
- SYS ENG 378/ELEC ENG 368 Introduction to Neural Networks and Applications

Elective Courses (Select two courses not taken as a core course):
- ELEC ENG/COMP ENG/SYS ENG 301 Evolvable Hardware
- COMP SCI 347 Introduction to Artificial Intelligence
- COMP SCI 348 Evolutionary Computing
- COMP SCI 447 Advanced Topics in Artificial Intelligence
- COMP SCI 448 Advanced Evolutionary Computing
- SYS ENG/COMP ENG/ELEC ENG 458 Adaptive Critic Designs
- COMP SCI 434/SYS ENG/COMP ENG 404 Data Mining and Knowledge Discovery
- ELEC ENG 337 Neural Networks for Control
- SYS ENG 378/ELEC ENG 368 Introduction to Neural Networks and Applications
- MECH ENG 447/COMP ENG/ENG MGT/AERO ENG/COMP SCI 457 Markov Decision Processes
- SYS ENG 478 Advanced Neural Networks

The core courses will be offered alternately by the responsible departments, but students will need to specify one of the three graduate programs at the time of application as each program has different admission requirements.

Information Assurance & Security Officer Essentials
(Shared with Electrical and Computer Engineering)
Missouri S&T is Certified by the National Security Agency (NSA) Committee on National Security Systems (CNSS) for National Standards 4011 (National Training Standard for Information Systems Security (INFOSEC) Professionals) and 4014E (Information Assurance Training Standard for Information Systems Security Officers (ISSO)). The NSA's Information Assurance Courseware Evaluation (IACE) Program implements a process to systematically assess the degree to which the courseware from commercial, government, and academic sources maps to the national standards set by CNSS.

Curriculum:*
A graduate-level student may receive a Graduate Certificate in Information Assurance & Security Officer Essentials from one of the sponsoring departments at Missouri S&T by completing four three-credit courses:

- COMP SCI 317 Intellectual Property of Computer Scientists
- COMP SCI 362 Security Operations & Program Management
- COMP ENG349 Trustworthy, Survivable Computer Networks
- COMP ENG 449/SYS ENG 449 Network-Centric Systems Reliability & Security

Information Systems & Cloud Computing
This certificate program is tailored to the working professional who wants to expand their knowledge of advanced data management technologies. Object-oriented database structure, data mining, web database, bioinformatics and multimedia storage and retrieval techniques form the core of the study.

Curriculum:*
You must take the following courses:
- COMP SCI 301 Introduction to Data Mining
- COMP SCI 401 Cloud Computing
- COMP SCI 438 Heterogeneous and Mobile Databases

Choose one of the following:
- COMP SCI 338 Database Systems
- COMP SCI 444 Data Mining & Knowledge Discovery
- COMP SCI 461 Privacy Preserving Data Integration and Analysis
Software Design and Development
The Software Design and Development Certificate provides an attractive option for working professional to expand their knowledge in Software Engineering. The core courses give an overview of software project management and its many roles, from overall project management and process improvement to the management of individual lifecycle components, including software deployment and evolution. Specialized coursework gives depth in advanced object-oriented design, requirements, software quality and testing theory and practice and an advanced treatment of software metrics.

Curriculum:*  
The program consists of these courses:  
COMP SCI 307 Software Testing and Quality Assurance  
COMP SCI 308 Object Oriented Analysis and Design  
COMP SCI 406 Software Engineering II  
COMP SCI 409 Software Requirements Engineering

Systems and Software Architecture
The systems and software architect fills a critical role in today's development process, transforming market inputs into the requirements and architecture specification of a product such that independent (often remote) development teams could implement. This focused graduate certificate training program on Systems and Software Architecting was created because of requests from various industrial partners.

Curriculum:*  
The program of study consists of four required courses:  
SYS ENG/COMP ENG 470 Software Intensive Systems Architecting  
COMP SCI 409 Software Requirements Engineering  
COMP SCI 308 Object-Oriented Analysis and Design  
SYS ENG 435/COMP SCI 405 Model Based Systems Engineering

Wireless Networks and Mobile Systems
The Wireless Networks and Mobile Systems Certificate is designed to provide students an intensive treatment in wireless systems and applications. Program coverage includes network architecture and protocols, computer communication and networking basics, principles of network security, and techniques for preventing, detecting and recovering from attacks, as well as advanced topics that address the specific issues and challenges in the wireless and mobile environment, including wireless network provisioning and deployment, location and mobility management, security and privacy, attacks and countermeasures, mobile computing applications, and data management in networked sensor systems.

Curriculum:*  
The program consists of these courses:  
COMP SCI 365 Computer Communications and Networks  
COMP SCI 401 Pervasive Computing  
COMP SCI 438 Heterogeneous and Mobile Databases  
COMP SCI 463 Computer Security  
COMP SCI 467 Mobile and Sensor Data Management  
COMP SCI 468 Advanced Network Security

*Curriculum is subject to change. Please contact the department for up-to-date information on courses.

Admission Requirements
The graduate certificate program is open to all individuals holding a BS degree in an engineering or hard scientific discipline who have a minimum of two years of professional experience or are currently accepted into a graduate degree program at Missouri S&T. The only entrance requirements for students entering a Graduate Certificate Program are that they satisfy the prerequisites for any course they take in the program.

Once admitted to the program, a student will be given three years to complete the program as long as a B average is maintained in the courses taken. If a grade of B or better is maintained in each of the courses taken, the student may be admitted to the corresponding graduate degree program. The certificate courses taken by students admitted to the program will count toward the master's degree.

Department Contact Information
Graduate Coordinator  
Computer Science  
Missouri University of Science and Technology  
325 Computer Science Bldg.  
500 W. 15th St., Rolla, MO 65409-0350  
Phone: 573-341-6642  
Email: csgradcoord@mst.edu  |  Web: http://cs.mst.edu/

Application Deadlines:  
Fall semester - August  
Spring semester - December  
Summer session - May

For more information, go online distance.mst.edu