Master of Science in Cyber Technology Advisement Guidelines

Revised

July 14, 2025

Department of Computer Science and Information Technology

College of Science, Technology, Engineering and Mathematics

Clayton State University

MASTER OF SCIENCE IN CYBER TECHNOLOGY (MSCT)

MSCT is designed to enable both traditional students and working adults to pursue graduate education in the field of cyber technology. Students will be equipped with knowledge and skills needed to advance their career or perform a mid-career transition into cyber technology areas. The objective is to prepare students to work and study independently and collaboratively, to pursue an academic career or professional career in industry, business, or government.

STUDENT OUTCOMES

Gradates of this program will be able to

- secure data using current software and hardware tools, and respond to threats that occur over the internet
- design and implement risk analysis, security policies, and damage assessment
- plan, implement and audit operating systems' security in a networked, multi-platform and cross platform environment
- provide contingency operations like administrative planning for incident response, disaster recovery or business continuity planning within information security.

ADMISSION REQUIREMENTS

- To be admitted into MSCT, an applicant must have earned a bachelor's degree with a minimum 2.5 GPA from an accredited college or university.
- Students must submit a copy of their resume.
- International students whose native language is not English are required to submit English Language Proficiency through one of the following options: TOEFL (minimum score of 78 total on the internet-based TOEFL), IELTS (minimum score of 6 total), Duolingo English Test (Minimum score of 100), or successful completion of an approved University System of Georgia (USG) intensive ESL program.
- If an applicant has completed any coursework, degree, or degrees from institutions outside of the United States, he or she must utilize a credential evaluation service. The School of Graduate Studies accepts an official course-by-course evaluation with a GPA that is prepared by either Josef Silney and Associates or World Education Services.

CREDIT TRANSFER

Students can transfer, at most, 6 credit hours of non-core courses from other college or university subjects to the approval of Clayton State University.

ACADEMIC ADVISEMENT

Please note it is the students' responsibility to follow the Department policies and get proper advisement to complete the degree requirements and graduate on time. Hence, once the student is admitted into MSCT programs, the student must:

- Schedule an appointment with the program coordinator to develop a study/graduation plan in their first semester.
- Seek the program coordinator's approval before adding or dropping a class.
- Periodically update their study plan with the program coordinator.

PROGRAM REQUIREMENTS

The program offers three program tracks: the Applied (Project) Track, the Research (Thesis) Track, and the Course Only track.

1. Applied (Project) Track
   Students who select the Applied (Project) track must successfully complete a total of 30 credit hours:
   - Four (4) MSCT core courses: 12 credit hours
   - Four (4) concentration courses: 12 credit hours
   - CSCI 6574 Research Techniques: 3 credit hours
   - CSCI 6599 Special Project: 3 credit hours

2. Research (Thesis) Track
   Students who select the Research (Thesis) track must successfully complete a total of 30 credit hours:
   - Four (4) MSCT courses: 12 credit hours
   - Four (4) concentration courses: 12 credit hours4
   - CSCI 6600 Thesis: 3 credit hours
   - CSCI 6574 Research Techniques: 3 credit hours

3. Course Only Track
   Students who select the Course Only track must successfully complete a total of 30 credit hours:
   - Four (4) MSCT core courses: 12 credit hours
   - Four (4) concentration courses: 12 credit hours
   - CSCI 6574 Research Techniques: 3 credit hours
   - One additional CSIT graduate course: 3 credit hours

REQUIRED CORE COURSES
- CSCI 5306 Computer & Networks Security
- CSCI 5317 Operating Systems Administration and Security
- CSCI 5601 Software Security
- CSCI 5701 Introduction to Cybersecurity

CONCENTRATION COURSES
Choose 4 courses (12 credit hours) for a chosen concentration:

- Information Security Concentration
  CSCI 5501 Secure Network Modeling and Simulation
  CSCI 6010 Digital Forensics and Incident Response
  CSCI 6012 Information Risk Management
  CSCI 6092 Advanced Topics in Cyber Technology
  CSCI 6306 Cryptographic Techniques
  CSCI 6310 Data Security and Analytics

- Operation and Security Management
  CSCI 5502 Secure Networks and Communications Protocols
  CSCI 6010 Digital Forensics and Incident Response
  CSCI 6092 Advanced Topics in Cyber Technology
  CSCI 6134 Enterprise Security Management
  CSCI 6208 Disaster Recovery Planning
  CSCI 6308 Cloud Computing

CSCI 6599 SPECIAL PROJECT REQUIREMENTS

1. Special Project Supervisor

   In the semester before the CSCI 6599 Special Project semester, a student must select a graduate faculty member in the Department as his/her project supervisor and submit the completed Special Project Supervisor Form to the MSDS Program Coordinator before October 1st (if he/she will register for CSCI 6599 in the following Spring semester) or March 1st (if he/she will register for CSCI 6599 in the following Fall semester).

2. Special Project Proposal
   After submitting the Special Project Supervisor Form, the student must work with the supervisor to propose a project for the Special Project course. The proposal must be presented to the supervisor before the supervisor approves the proposal. The student must submit the completed Special Project Proposal Approval Form to the MSDS Program Coordinator by December 1st (if he/she will register for CSCI 6599 in the following Spring semester) or May 1st (if he/she will register for CSCI 6599 in the following Fall semester).

3. Special Project Presentation
   After completing the project, the student must present and defend the project to all faculty members in the Department at a scheduled time by no later than the withdrawal deadline of the graduating semester.

4. Special Project Report

The student must complete the project report and get it approved by the supervisor and file a copy of the approved project report to the department by December 1st (Fall Semester Project) or May 1st (Spring Semester Project). Please refer to the Special Project Format Guideline when completing the report.

CSCI 6600 THESIS REQUIREMENTS

1. Thesis Chair & Committee Members

   In the semester before the CSCI 6600 Thesis semester, a student must select a graduate faculty member in the Department as his/her thesis chair and consult with his/her thesis chair to select at least one more member to form the thesis committee. The student must submit the completed Thesis Chair and Thesis Committee Selection Form to the MSDS Program Coordinator before October 1st (if he/she will register for CSCI 6600 in the following Spring semester) or March 1st (if he/she will register for CSCI 6600 in the following Fall semester).

2. Thesis Proposal
   The students must work with the thesis committee to prepare a thesis proposal and present it to the faculty members in the Department. The student must submit a copy of the Thesis Prospectus Approval Form electronically to the School of Graduate Studies by December 1st (if he/she will register for CSCI 6600 in the following Spring semester) or May 1st (if he/she will register for CSCI 6600 in the following Fall semester).

3. Written Thesis Approval & Oral Defense
   The student must complete the thesis, get the written thesis approved for oral defense on the Approval Form for master's Thesis (See Graduate Thesis Guide for thesis formatting requirements), and defend the thesis no later than the midpoint of the semester the student plans to graduate (See the Academic Calendar for midpoint deadlines). The student must make all corrections to the thesis as requested by the committee, and get the Thesis Chair and the Graduate Coordinator sign the rest of the Approval Form for master's Thesis no later than the withdrawal deadline of the graduating semester.

4. Clayton State Digital Repository (CSDR)
   The student must create an account on CSDR and upload the thesis to CSDR (See https://www.clayton.edu/library/repository for more details).

GRADUATE FACULTY

- Shakil Akhtar, Professor
- Xiangdong An, Assistant Professor
- Shuju Bai, Professor

- Byron Jeff, Associate Professor
- Ebrahim Khosravi, Professor
- Ken Nguyen, Professor
- Junfeng Qu, Professor
- Muhammad Rahman, Professor

GRADUATION PREPARATION

If you are scheduled to complete your degree requirements in the upcoming semester, be sure to meet with your program coordinator to confirm that you are on track to graduate. Once you have determined that you are ready to apply for graduation, complete the application by the appropriate deadline: June 1 for Fall graduation, September 15 for Spring graduation, and January 30 for summer graduation.

PLAN OF STUDY & RECOMMENDED COURSE SEQUENCES

MSCT Program Plan of Study

Note: Plan of Study must be approved by the student's Graduate Program Coordinator

Student Information

Name _____   Laker ID _____

Email _____   Phone _____

Graduate Program Coordinator: Dr. Shakil Akhtar _____

                                              Graduate Program Coordinator Signature   Date

		Course ID	Course Title	Semester	Year	Credits
Core Courses (12 credit hours)	Students must take all the 4 core courses	CSCI 5306	Computer & Networks Security (3)	Fall		3
		CSCI 5317	Operating Systems Admin& Secur (3)	Spring		3
		CSCI 5601	Software Security (3)	Fall		3
		CSCI 5701	Introduction to Cybersecurity (3)	Spring		3
Select one concentration (12 credit hours)	Operation and Security Management (Select 4 courses)	CSCI 5502	Secure Networks & Communications Protocols (3)	Fall		
		CSCI 6010	Digital Forensics and Incident response (3)	Fall		
		CSCI 6092	Adv. Topics in Cyber Tech. (3)	Spring		
		CSCI 6134	Enterprise Security Management (3)			
		CSCI 6208	Disaster Recovery Planning (3)			
		CSCI 6308	Cloud Computing (3)	Spring		
	Information Security (Select 4 courses)	CSCI 5501	Secure Network Modeling &Simul (3)	Fall		
		CSCI 6010	Digital Forensics and Incident response (3)	Fall		
		CSCI 6092	Adv. Topics in Cyber Tech. (3)	Spring		
		CSCI 6012	Information Risk Management (3)	Spring		
		CSCI 6306	Cryptographic Techniques (3)			
		CSCI 6310	Data Security and Analytics (3)			
Research techniques (3 credit hours)		CSCI 6574	Research Techniques (3)	Fall/Spring		3
Select one track (3 credit hours)	Project Track	CSCI 6599	Special Project (3)	Fall/Spring		
	Thesis Track	CSCI 6600	Thesis (3)	Fall/Spring		
	Course Only Track	CSCI				
Total Credits						30

Note:

1. Take CSCI 6574 in the first semester if you plan to graduate in 3 semesters. CSCI 6574 is a prerequisite for CSCI 6599/6600.
2. Identify a CSIT professor to serve as your supervisor before you take CSCI 6600 or CSCI 6599.
3. CSCI 6600 or CSCI 6599 must be scheduled in your last semester of the graduate program.
4. A graduate student can take at most 12 credit hours in each semester, and at most 6 credit hours if placed on Academic Probation. Graduate students whose institutional GPA falls below the minimum acceptable GPA of 3.0 are placed on Academic Probation.
5. A grade of at least C is required for each course, but a student must achieve a cumulative institutional GPA of at least 3.00 in all graduate courses taken at the time of graduation.

MSCT Program Recommended Sequences of Courses for 3 Semester Completion

Operation and Security Management Concentration		Information Security Concentration	
Fall Semester		**Fall Semester**	
CSCI 5306	Computer & Networks Security	CSCI 5306	Computer & Networks Security
CSCI 5502	Secure Networks & Comm. Protocols	CSCI 5501	Secure Network Modeling &Simul
CSCI 5601	Software Security	CSCI 5601	Software Security
CSCI 6574	Research Techniques	CSCI 6574	Research Techniques
Spring Semester		**Spring Semester**	
CSCI 5317	Operating Systems Admin & Security	CSCI 5317	Operating Systems Admin & Security
CSCI 5701	Introduction to Cybersecurity	CSCI 5701	Introduction to Cybersecurity
CSCI 6092	Adv. Topics in Cyber Tech.	CSCI 6092	Adv. Topics in Cyber Tech.
CSCI 6308	Cloud Computing	CSCI 6012	Information Risk Management
Fall Semester		**Fall Semester**	
CSCI 6010	Digital Forensics and Incident resp.	CSCI 6010	Digital Forensics and Incident resp.
CSCI 6599 / 6600 / ___	Special Project / Thesis / _____	CSCI 6599 / 6600 / ___	Special Project / Thesis / _____

Operation and Security Management Concentration		Information Security Concentration	
Fall Semester		**Fall Semester**	
CSCI 5306	Computer & Networks Security	CSCI 5306	Computer & Networks Security
CSCI 6574	Research Techniques	CSCI 6574	Research Techniques
Spring Semester		**Spring Semester**	
CSCI 5317	Operating Systems Admin & Security	CSCI 5317	Operating Systems Admin & Security
CSCI 5701	Introduction to Cybersecurity	CSCI 5701	Introduction to Cybersecurity
CSCI 6092	Adv. Topics in Cyber Tech.	CSCI 6092	Adv. Topics in Cyber Tech.
CSCI 6308	Cloud Computing	CSCI 6012	Information Risk Management
Fall Semester		**Fall Semester**	
CSCI 5502	Secure Networks & Comm. Protocols	CSCI 5501	Secure Network Modeling &Simul
CSCI 5601	Software Security	CSCI 5601	Software Security
CSCI 6010	Digital Forensics and Incident resp.	CSCI 6010	Digital Forensics and Incident resp.
CSCI 6599 / 6600 / ___	Special Project / Thesis / _____	CSCI 6599 / 6600 / ___	Special Project / Thesis / _____

Operation and Security Management Concentration		Information Security Concentration	
Fall Semester		**Fall Semester**	
CSCI 5306	Computer & Networks Security	CSCI 5306	Computer & Networks Security
CSCI 5601	Software Security	CSCI 5601	Software Security
CSCI 6574	Research Techniques	CSCI 6574	Research Techniques
Spring Semester		**Spring Semester**	
CSCI 5317	Operating Systems Admin & Security	CSCI 5317	Operating Systems Admin & Security
CSCI 5701	Introduction to Cybersecurity	CSCI 5701	Introduction to Cybersecurity
CSCI 6092	Adv. Topics in Cyber Tech.	CSCI 6092	Adv. Topics in Cyber Tech.
CSCI 6308	Cloud Computing	CSCI 6012	Information Risk Management
Fall Semester		**Fall Semester**	
CSCI 5502	Secure Networks & Comm. Protocols	CSCI 5501	Secure Network Modeling &Simul
CSCI 6010	Digital Forensics and Incident resp.	CSCI 6010	Digital Forensics and Incident resp.
CSCI 6599 / 6600 / ___	Special Project / Thesis / _____	CSCI 6599 / 6600 / ___	Special Project / Thesis / _____

Table 1

Operation and Security Management Concentration		Information Security Concentration	
Spring Semester		**Spring Semester**	
CSCI 5317	Operating Systems Admin & Security	CSCI 5317	Operating Systems Admin & Security
CSCI 5701	Introduction to Cybersecurity	CSCI 5701	Introduction to Cybersecurity
CSCI 6092	Adv. Topics in Cyber Tech.	CSCI 6092	Adv. Topics in Cyber Tech.
CSCI 6574	Research Techniques	CSCI 6574	Research Techniques
Fall Semester		**Fall Semester**	
CSCI 5306	Computer & Networks Security	CSCI 5306	Computer & Networks Security
CSCI 5502	Secure Networks & Comm. Protocols	CSCI 5501	Secure Network Modeling &Simul
CSCI 5601	Software Security	CSCI 5601	Software Security
CSCI 6010	Digital Forensics and Incident resp.	CSCI 6010	Digital Forensics and Incident resp.
Spring Semester		**Spring Semester**	
CSCI 6308	Cloud Computing	CSCI 6012	Information Risk Management
CSCI 6599 / 6600 / ___	Special Project / Thesis / _____	CSCI 6599 / 6600 / ___	Special Project / Thesis / _____

Table 2

Operation and Security Management Concentration		Information Security Concentration	
Spring Semester		**Spring Semester**	
CSCI 5317	Operating Systems Admin & Security	CSCI 5317	Operating Systems Admin & Security
CSCI 6574	Research Techniques	CSCI 6574	Research Techniques
Fall Semester		**Fall Semester**	
CSCI 5306	Computer & Networks Security	CSCI 5306	Computer & Networks Security
CSCI 5502	Secure Networks & Comm. Protocols	CSCI 5501	Secure Network Modeling &Simul
CSCI 5601	Software Security	CSCI 5601	Software Security
CSCI 6010	Digital Forensics and Incident resp.	CSCI 6010	Digital Forensics and Incident resp.
Spring Semester		**Spring Semester**	
CSCI 5701	Introduction to Cybersecurity	CSCI 5701	Introduction to Cybersecurity
CSCI 6092	Adv. Topics in Cyber Tech.	CSCI 6092	Adv. Topics in Cyber Tech.
CSCI 6308	Cloud Computing	CSCI 6012	Information Risk Management
CSCI 6599 / 6600 / ___	Special Project / Thesis / _____	CSCI 6599 / 6600 / ___	Special Project / Thesis / _____

Table 3

Operation and Security Management Concentration		Information Security Concentration	
Spring Semester		**Spring Semester**	
CSCI 5317	Operating Systems Admin & Security	CSCI 5317	Operating Systems Admin & Security
CSCI 5701	Introduction to Cybersecurity	CSCI 5701	Introduction to Cybersecurity
CSCI 6574	Research Techniques	CSCI 6574	Research Techniques
Fall Semester		**Fall Semester**	
CSCI 5306	Computer & Networks Security	CSCI 5306	Computer & Networks Security
CSCI 5502	Secure Networks & Comm. Protocols	CSCI 5501	Secure Network Modeling &Simul
CSCI 5601	Software Security	CSCI 5601	Software Security
CSCI 6010	Digital Forensics and Incident resp.	CSCI 6010	Digital Forensics and Incident resp.
Spring Semester		**Spring Semester**	
CSCI 6092	Adv. Topics in Cyber Tech.	CSCI 6092	Adv. Topics in Cyber Tech.
CSCI 6308	Cloud Computing	CSCI 6012	Information Risk Management
CSCI 6599 / 6600 / ___	Special Project / Thesis / _____	CSCI 6599 / 6600 / ___	Special Project / Thesis / _____

COURSE DESCRIPTION

CSCI 5306. Computer & Networks Security (3)

This course covers the design and implementation of protocols, and the vulnerabilities and risk associated with these implementations. Other topics include Cryptographic techniques and algorithms. Design and implementation of network routing protocols and security architecture will be done using software simulation tools. Departmental Approval or Consent of Instructor

CSCI 5317. Operating Systems Admin & Secur (3)

This course covers computer operating systems, such as UNIX and Linux, systems programming, systems administration, and operating systems hardening.

CSCI 5501. Secure Network Modeling & Simul (3)

This graduate-level course will examine modern techniques for secure network planning, analyzing with modeling the structure and dynamics of secure complex networks. Topics include gathering, interpreting, and evaluating customer requirements; defining the scope of work and analyzing resource and technology constraints and system interdependencies; analyzing facilities bandwidth requirements and capacity planning; researching product and vendor architecture and equipment specifications and limitations; finally, preparing an overall integration plan for new processes, protocols and equipment. A graduate level software project will be completed by each student.

CSCI 5502. Secure Networks & Communication (3)

This graduate course will include topics on hardware and software diagnostic tools and utilities, LANs MANs, WANs and the Internet, OSI protocol stack, flow control, switching, data compression, application program-network interface, and security issues. Also included are basic electronic topics such as electrical measurements, DC and AC circuits, diodes, transistors and OP amps, digital electronics, and microprocessors. A graduate level software project will be completed by each student.

CSCI 5601. Software Security (3)

This course will provide students with knowledge of software security risks and policies management, software security theories, secure software design and testing, secure coding, and software security standards. Students will be exposed to the techniques and tools needed for the practice of effective software security to understand how to protect software and how to secure software.

CSCI 5701. Introduction to Cybersecurity (3)

This course will address network and web-based security issues in general: network intruders (hackers), security policies and procedures, firewall, encryption, authentication and access control, and viruses. In addition, security issues applied to various LAN and WAN environments, are covered. Some e-commerce security topics, such as electronic payments, secure transactions, secure sockets layer, digital signatures, and auditing, are also covered.

CSCI 6010. Digital Forensics and Incident (3)

This course covers concepts and techniques in the field of computer and cyber forensics, which includes investigating, acquiring, preserving and analyzing digitally stored information. Students will practice performing digital forensics investigations using industry-standard forensic tools, techniques and procedures in the digital forensic process. Students will analyze various effective plans for crisis management and incident-handling process, including methods and standards for extraction and preservation of legal evidence, uncovering illicit activities, recovering information left on digital storages and extracting files from intentionally damaged media.

CSCI 6012. Information Risk Management (3)

This course will provide students with a good understanding of identifying, assessing, analyzing, measuring, and responding to information risk. Students will be able to make risk mitigation and acceptance decisions given its resource constraints. Students will be able to use risk management tools, regulations, and methodologies for metrics to monitor risk management activities.

CSCI 6092. Adv. Topics in Cyber Tech. (3)

The current and latest topics in Cyber Technology research will be presented. Students will review the articles, journals, and white papers using the Internet, computerized databases and library resources.

CSCI 6134. Enterprise Security Management (3)

This course covers threat assessment, risk management, and protection of networks, hardware, and data for enterprise level systems.

CSCI 6208. Disaster Recovery Planning (3)

This course explores the plans and preparations needed to recover from disasters affecting enterprise information systems and critical infrastructures with the goal of maintaining business continuity. Emphasis is given to the technological aspect of the planning for recovery and business continuity planning. Topics include disaster recovery planning, risk control policies and countermeasures, disaster recovery tools and services, and virtualization principles.

CSCI 6306. Cryptographic Techniques (3)

This course introduces the tools and techniques used in modern cryptography. Topics include secret and public key ciphers, one-way hashing algorithms, authentication and identification, digital signatures, key establishment and management, steganography, secret sharing and data recovery, public key infrastructures, and efficient implementation. Privacy and security at the upper layers are also discussed.

CSCI 6308. Cloud Computing (3)

This course introduces students to the Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS). It covers a broad range of Cloud vendor platforms including AWS, Google App Engine, Microsoft Azure, Eucalyptus, OpenStack and others. The topics include both concepts on parallel and distributed computing platforms and programming skills required for harvesting computational powers.

CSCI 6310. Data Security and Analytics (3)

This course will provide students with a good understanding of data security laws and standards, risk management of data security, data security models, data security and auditing, data encryption. We will also cover various artificial intelligence analysis and risk assessment techniques applied to data security. The AI-based solutions will be discussed to support data threats and risk assessments and detection.

CSCI 6574. Research Techniques (3)

Students will learn how to conduct literature reviews of articles, journals, and white papers using the Internet, computerized databases and library resources. Students will learn to develop research questions, hypotheses, research topics, research designs and write research papers in standard format.

CSCI 6599. Special Project (3)

Continuation of research on Special Project. Satisfactory oral defense of topic is required for graduation.

CSCI 6600. Thesis (3)

Continuation of research on thesis. Satisfactory oral defense of topic is required for graduation.