



Program Guidebook

Master of Science, Cybersecurity and Information Assurance

The Master of Science in Cybersecurity and Information Assurance prepares security professionals to protect an organization's operations in the cyberspace by providing them with the tools, techniques, and standards required to prevent, detect, and counteract cyberattacks. The program not only focuses on keeping infrastructure safe but also the assurance of information covering subjects ranging from cryptography to business continuity planning and disaster recovery.

Understanding the Competency-Based Approach

Practically speaking, how do competency-based programs like those offered at Western Governors University (WGU) work? Unlike traditional universities, WGU does not award degrees based on completion of a certain number of credit hours or a certain set of required courses. Instead, you will earn your degree by demonstrating your skills, knowledge, and understanding of important concepts.

Progress through a degree program is governed not by the amount of time you spend in class but by your ability to demonstrate mastery of competencies as you complete required courses. Of course, you will need to engage in learning experiences as you review competencies or develop knowledge and skills in areas in which you may be weak. To help you acquire the knowledge and skills you need to complete your courses and program, WGU provides a rich array of learning resources. Your program mentor will work closely with you to help you understand the competencies required for your program and to help you create a schedule for completing your courses. You will also work closely with course instructors as you engage in each of your courses. As subject matter experts, course instructors will guide you through the content you must master to pass the course assessments.

The benefit of this competency-based system is that enables students who are knowledgeable about a particular subject to make accelerated progress toward completing a degree, even if they lack college experience. You may have gained skills and knowledge of a subject while on the job, accumulated wisdom through years of life experience, or already taken a course on a particular subject. WGU will award your degree based on the skills and knowledge that you possess and can demonstrate—not the number of credits hours on your transcript.

Accreditation

Western Governors University is the only university in the history of American higher education to have earned accreditation from four regional accrediting commissions. WGU's accreditation was awarded by (1) the Northwest Commission on Colleges and Universities, (2) the Higher Learning Commission of the North Central Association of Colleges and Schools, (3) the Accrediting Commission for Community and Junior Colleges of the Western Association of Schools and Colleges, and (4) the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges. The university's accreditation status is now managed by the Northwest Commission on Colleges and Universities (NWCCU), which reaffirmed WGU's accreditation in February 2017. The WGU Teachers College is accredited by the National Council for Accreditation of Teacher Education (NCATE). The nursing programs are accredited by the Commission on Collegiate Nursing Education (CCNE). The Health Information Management program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). The College of Business programs are accredited by the Accreditation Council for Business Schools and Programs (ACBSP).

The Degree Plan

The focus of your program is your personalized Degree Plan. The Degree Plan is a detailed blueprint of the courses you will need to complete in order to earn your degree. The Degree Plan also lays out the accompanying learning resources and assessments that compose your program. The list of courses in the Degree Plan is often referred to as the standard path. The amount of time it takes to complete your program depends on both the amount of new information you need to learn and the amount of time you plan to devote each week to study. Your program mentor and course instructors will help you assess

your strengths and development needs to establish a study plan.

Students vary widely in the specific skills and information they need to learn. For example, some students may be highly knowledgeable in a particular subject matter and would not need to engage in new learning opportunities. Other students may find that portions of the program require them to learn new information and that they need to take an online class or participate in a study module to acquire the knowledge and skills needed to fulfill program competencies in that area. Some individuals may be able to devote as little as 15–20 hours per week to the program, while others may need to devote more time. For this reason, pre-assessments are there to help your program mentor form a profile of your prior knowledge and create a personalized Degree Plan.

How You Will Interact with Faculty

At WGU, faculty serve in specialized roles, and they will work with you individually to provide the guidance, instruction, and support you will need to succeed and graduate. As a student, it is important for you to take advantage of this support. It is key to your progress and ultimate success.

Upon your enrollment, you will be assigned a program mentor—an expert in your field of study who will provide you with regular program-level guidance and support from the day you start until the day you graduate. Your program mentor will set up regular telephone appointments (weekly at first) with you, which you will be expected to keep. The mentor will review program competencies with you and work with you to develop a plan and schedule for your coursework. Your program mentor will serve as your main point of contact throughout your program—helping you set weekly study goals, recommending specific learning materials, telling you what to expect in courses, and keeping you motivated. In addition to regular calls, your program mentor is available to help you resolve questions and concerns as they arise.

You will also be assigned to a course instructor for each course. Course instructors are doctoral-level subject matter experts who will assist your learning in each individual course. When you begin a new course, your assigned course instructor will actively monitor your progress and will be in touch to offer one-on-one instruction and to provide you with information about webinars, cohort sessions, and other learning opportunities available to help you acquire the competencies you need to master the course. Your course instructor can discuss your learning for the course, help you find answers to content questions, and give you the tools to navigate the course successfully. In addition, you will communicate with course instructors by posting in the online learning community and participating in live discussion sessions such as webinars and cohorts.

For many of the courses at WGU, you will be required to complete performance assessments. These include reports, papers, presentations, and projects that let you demonstrate your mastery of the required competencies. A separate group of faculty members, called evaluators, will review your work to determine whether it meets requirements. Evaluators are also subject matter experts in their field of evaluation. If your assessment needs further work before it “passes,” these evaluators, who review your work anonymously, will provide you with instructional feedback to help you meet evaluation standards and allow you to advance.

Connecting with Other Mentors and Fellow Students

As you proceed through your Degree Plan, you will have direct contact with multiple faculty members. These communications can take a variety of forms, including participation in one-on-one discussions, chats in the learning communities, and live cohort and webinar opportunities. As a WGU student, you will have access to your own personal MyWGU Student Portal, which will provide a gateway to your courses of study, learning resources, and learning communities where you will interact with faculty and other students.

The learning resources in each course are specifically designed to support you as you develop competencies in preparation for your assessments. These learning resources may include reading materials, videos, tutorials, cohort opportunities, community discussions, and live discussions that are guided by course instructors who are experts in their field. You will access your program community during your orientation course to network with peers who are enrolled in your program and to receive continued support through professional enrichment and program-specific chats, blogs, and discussions. WGU also provides Student Services associates to help you and your program mentor solve any special problems that may arise.

Orientation

The WGU orientation course focuses on acquainting you with WGU's competency-based model, distance education, technology, and other resources and tools available for students. You will also utilize WGU program and course communities, participate in activities, and get to know other students at WGU. The orientation course must be completed before you can start your first term at WGU.

Transferability of Prior College Coursework

Because WGU is a competency-based institution, it does not award degrees based on credits but rather on demonstration of competency. However, if you have completed college coursework at another accredited institution, or if you have completed industry certifications, you may have your transcripts and certifications evaluated to determine if you are eligible to receive some transfer credit. The guidelines for determining what credits will be granted varies based on the degree program. Students entering graduate programs must have their undergraduate degree verified before being admitted to WGU. To review more information in regards to transfer guidelines based on the different degree programs, you may visit the Student Handbook found at the link below and search for "Transfer Credit Evaluation."

[Click here for the Student Handbook](#)

WGU does not waive any requirements based on a student's professional experience and does not perform a "résumé review" or "portfolio review" that will automatically waive any degree requirements. Degree requirements and transferability rules are subject to change in order to keep the degree content relevant and current.

Remember, WGU's competency-based approach lets you take advantage of your knowledge and skills, regardless of how you obtained them. Even when you do not directly receive credit, the knowledge you possess may help you accelerate the time it takes to complete your degree program.

Continuous Enrollment, On Time Progress, and Satisfactory Academic Progress

WGU is a "continuous enrollment" institution, which means you will be automatically enrolled in each of

your new terms while you are at WGU. Each term is six months long. Longer terms and continuous enrollment allow you to focus on your studies without the hassle of unnatural breaks between terms that you would experience at a more traditional university. At the end of every six-month term, you and your program mentor will review the progress you have made and revise your Degree Plan for your next six-month term.

WGU requires that students make measurable progress toward the completion of their degree programs every term. We call this “On-Time Progress,” denoting that you are on track and making progress toward on-time graduation. As full-time students, graduate students must enroll in at least 8 competency units each term, and undergraduate students must enroll in at least 12 competency units each term. Completing at least these minimum enrollments is essential to On-Time Progress and serves as a baseline from which you may accelerate your program. We measure your progress based on the courses you are able to pass, not on your accumulation of credit hours or course grades. Every time you pass a course, you are demonstrating that you have mastered skills and knowledge in your degree program. For comparison to traditional grading systems, passing a course means you have demonstrated competency equivalent to a “B” grade or better.

WGU assigns competency units to each course in order to track your progress through the program. A competency unit is equivalent to one semester credit of learning. Some courses may be assigned 3 competency units while others may be as large as 12 competency units.

Satisfactory Academic Progress (SAP) is particularly important to students on financial aid because you must achieve SAP in order to maintain eligibility for financial aid. We will measure your SAP quantitatively by reviewing the number of competency units you have completed each term. In order to remain in good academic standing, you must complete at least 66.67% of the units you attempt over the length of your program—including any courses you add to your term to accelerate your progress. Additionally, during your first term at WGU you must pass at least 3 competency units in order to remain eligible for financial aid. We know that SAP is complex, so please contact a financial aid counselor should you have additional questions. *Please note: The Endorsement Preparation Program in Educational Leadership is not eligible for federal financial aid.

Courses

Your Degree Plan includes courses needed to complete your program. To obtain your degree, you will be required to demonstrate your skills and knowledge by completing the assessment(s) for each course. In general there are two types of assessments: performance assessments and objective assessments. Performance assessments contain, in most cases, multiple scored tasks such as projects, essays, and research papers. Objective assessments include multiple-choice items, multiple-selection items, matching, short answer, drag-and-drop, and point-and-click item types, as well as case study and video-based items. Certifications verified through third parties may also be included in your program. More detailed information about each assessment is provided in each course of study.

Learning Resources

WGU works with many different educational partners, including enterprises, publishers, training companies, and higher educational institutions, to provide high-quality and effective learning resources that match the competencies you are developing. These vary in type, and may be combined to create

the best learning experience for your course. A learning resource can be an e-textbook, online module, study guide, simulation, virtual lab, tutorial, or a combination of these. The cost of most learning resources are included in your tuition and Learning Resource Fee. They can be accessed or enrolled for through your courses. Some degree-specific resources are not covered by your tuition, and you will need to cover those costs separately. WGU also provides a robust library to help you obtain additional learning resources, as needed.

Mobile Compatibility:

The following article provides additional details about the current state of mobile compatibility for learning resources at WGU. It includes a list that can be referenced to determine the mobile friendliness of all core course materials used in a program.

[Student Handbook article: Can I use my mobile device for learning resources?](#)

Standard Path

As previously mentioned, competency units (CUs) have been assigned to each course in order to measure your academic progress. If you are an undergraduate student, you will be expected to enroll in a minimum of 12 competency units each term. Graduate students are expected to enroll in a minimum of 8 competency units each term. A standard plan for a student for this program who entered WGU without any transfer units would look similar to the one on the following page. Your personal progress can be faster, but your pace will be determined by the extent of your transfer units, your time commitment, and your determination to proceed at a faster rate.

Standard Path *for* Master of Science, Cybersecurity and Information Assurance

Course Description	CUs	Term
Risk Management	2	1
Cyberwarfare	3	1
Secure Network Design	3	1
Cyberlaw, Regulations, and Compliance	3	2
Secure Software Design	2	2
Security Policies and Standards - Best Practices	3	2
Ethical Hacking	4	3
Forensics and Network Intrusion	4	3
Disaster Recovery Planning, Prevention and Response	2	4
Information Security and Assurance Capstone Project	4	4

Changes to Curriculum

WGU publishes an Institutional Catalog, which describes the academic requirements of each degree program. Although students are required to complete the program version current at the time of their enrollment, WGU may modify requirements and course offerings within that version of the program to maintain the currency and relevance of WGU's competencies and programs. As these changes are implemented, WGU will ensure that the length of the student's degree program (i.e., total competency unit requirements) will not increase and that competency units already earned will be applied to the updated program version. When program requirements are updated, students readmitting after withdrawal from the university will be expected to re-enter into the most current catalog version of the program.

Areas of Study for Master of Science, Cybersecurity and Information Assurance

The following section includes the areas of study in the program, with their associated courses. Your specific learning resources and level of instructional support will vary based on the individual competencies you bring to the program and your confidence in developing the knowledge, skills, and abilities required in each area of the degree. The Degree Plan and learning resources are dynamic, so you need to review your Degree Plan and seek the advice of your mentor regarding the resources before you purchase them.

Risk Management

Risk Management

Content focuses on categorizing levels of risk and understanding how risk can impact the operations of the business through a scenario involving the creation of a risk management program and business continuity program for a company and a business situation reacting to a crisis/disaster situation affecting the company.

This course covers the following competencies:

- *The graduate applies international standards to company operations and assesses and recommends strategies for maintaining organizational stability and continuity in the global marketplace.*
- *The graduate makes ethical decisions for the use of information technology and creates processes to maintain the security of data in information technology systems.*
- *The graduate analyzes risks and values and uses a variety of decision analysis tools and decision theory to evaluate alternatives during decision-making processes.*
- *The graduate uses risk control and risk optimization analytics and strategies to maximize returns relative to risk for organizations.*
- *The graduate analyzes enterprise continuity plans and the continuity planning process to ensure the inclusion of essential elements, processes, and stakeholder roles.*
- *The graduate evaluates internal and external risks and recommends risk mitigation strategies and techniques to an organization.*
- *The graduate applies the problem solving process to solve organizational and team problems, and develops strategies to avoid decision-making pitfalls.*
- *The graduate develops and analyzes organizational contingency plans for responding to sudden and rapid environmental changes.*
- *The graduate develops and assesses enterprise risk management programs for organizations and incorporates industry best practices in risk management processes and programs.*

Security

Cyberwarfare

This course introduces you to the real-world battlefield of cyberspace. It covers the history of cyberwarfare and the variety of new concerns its emergence has fostered. This course explores how cyberwarfare has become an important part of the modern military arsenal and provides strategies for protecting a threatened network, as well as strategies for dealing with specific cyber war actors and threats. It then concludes with an exploration of the future of cyberwarfare considering the evolution of cyber-related capabilities, current threats, and emerging technology.

This course covers the following competencies:

- *The graduate formulates appropriate strategies for dealing with current cyberwarfare actors and threats from a U.S.-*

centric viewpoint.

- *The graduate predicts the future role of cyberwarfare, taking into consideration the evolution of cyber-related capabilities, current threats, and emerging technologies.*
- *The graduate outlines the changes to warfare with the evolution of cyber-related capabilities and technologies.*
- *The graduate develops strategies to protect a threatened network using appropriate federal standards, international standards, or industry best practices.*
- *The graduate analyzes the impact of cyberwarfare's supporting disciplines' interaction with overall combat operations.*

Secure Software Design

Secure Software Design focuses on the variety of elements needed to address and implement secure software acquisition and development throughout the Software Development Life Cycle (SDLC). It covers the end-to-end principles and addresses people, technology (tools), and processes to design and develop consistently secure applications. Additionally, this course underscores the importance and value of the defense in depth principle across the entire SDLC. Finally, this course introduces techniques to adapt common security activities to modern software development practices, including Agile/Scrum and DevOps. There are no prerequisites for this course.

This course covers the following competencies:

- *The graduate applies appropriate software security controls to each phase of the Software Development Lifecycle (SDLC) in order to design and develop secure applications.*
- *The graduate demonstrates strategies to address the human element in order to design and develop secure applications.*
- *The graduate assesses the effectiveness of software security controls in order to make adjustments as needed.*
- *The graduate implements security practices for development in order to honor the principles of "Building Security In."*
- *The graduate evaluates software defects and vulnerabilities in order to develop strategies to remediate those defects and to prevent future occurrences.*

Network Design and Management

Secure Network Design

Secure Network Design covers topics for designing and protecting computer networks. Course topics emphasize secure physical and logical network architecture design for both wired and wireless networks. Secure Network Design provides students the opportunity to recognize secure network characteristics, apply techniques to securely configure network devices, propose network segmentation strategies, perform root cause analysis, and recommend mitigation approaches based on industry best practices. There are no prerequisites for this course

This course covers the following competencies:

- *The graduate recommends network segmentation strategies to isolate network segments based on business requirements and security concerns.*
- *The graduate designs secure network architectures based on industry best practices and the principles of secure network design.*
- *The graduate determines network characteristics based on functionality defined in the Open Systems Interconnection (OSI) reference model and the TCP/IP protocol stack for designing and building highly secure computer networks.*
- *The graduate securely configures network devices to maximize the security of a computer network.*
- *The graduate performs root cause analysis to determine sources of network-related problems and propose solutions.*

Cyberlaw

Cyberlaw, Regulations, and Compliance

Cyberlaw, Regulations and Compliance prepares students to participate in legal analysis of relevant cyberlaws and address governance, standards, policies, and legislation. Students will conduct a security risk analysis for an enterprise system. In addition, students will determine cyber requirements for third-party vendor agreements. Students will also evaluate provisions of both the 2001 and 2006 USA PATRIOT Acts.

This course covers the following competencies:

- *The graduate explains the underlying principles governing e-commerce third-party vendor agreements and translates them into practical recommendations for the implementation of such agreements.*
- *The graduate evaluates the application of current laws and regulations in situations involving constitutional controversy and authority, deterring terrorism, ethical implications, or cybercrime.*
- *The graduate ensures alignment of regulatory requirements and standards with appropriate information security and assurance controls for organizations that process or hold private, financial or medical information electronically.*
- *The graduate analyzes cybercrime scenarios to determine potential implications to enterprise continuity.*
- *The graduate develops a legal analysis addressing legal issues, standards, policies, legislation, and governance related to cybercrimes for enterprise systems.*

Security Policies and Standards

Security Policies and Standards - Best Practices

This course focuses on the practices of planning and implementing organization-wide security and assurance initiatives as well as auditing assurance processes.

This course covers the following competencies:

- *The graduate evaluates security threats and identifies and applies security controls based on analyses and industry standards and best practices.*
- *The graduate identifies and discusses the Information Assurance certification and accreditation (C&A) process.*
- *The graduate evaluates the practice of defining and implementing a security audit and conducts an information security audit using industry best practices.*

Hacking

Ethical Hacking

Ethical Hacking builds the skills necessary to protect an organization's information system from unauthorized access and system hacking. Topics include security threats, penetration testing, vulnerability analysis, risk mitigation, business-related issues, and countermeasures. Students will learn how to expose system vulnerabilities, find solutions for eliminating and preventing them, and apply hacking skills on different types of networks and platforms. This course prepares students for the following certification exam: EC-Council's Certified Ethical Hacker exam (312-50). This course has no prerequisites.

This course covers the following competencies:

- *The graduate evaluates various network and system hacking concepts*
- *The graduate identifies session hijacking concepts and cryptography.*
- *The graduate analyzes ethical and legal issues related to the unauthorized access of information assets, including types of hacking technologies and related skills.*
- *The graduate evaluates techniques used in social engineering.*
- *The graduate evaluates vulnerability assessment concepts and reporting processes.*
- *The graduate evaluates techniques used in open-source information gathering, network scanning, and enumerating*

targets.

- *The graduate evaluates denial of service (DoS) techniques, intrusion detection systems (IDS), firewalls (FW), and honeypot concepts*
- *The graduate identifies known Web Application and Server vulnerabilities and the industry best practices to protect against this type of threat.*
- *The graduate evaluates hacking concepts and countermeasures for wireless networks, mobile platforms, internet of things (IoT), and cloud computing.*

Forensics and Network Intrusion

Forensics and Network Intrusion

Forensics and Network Intrusion builds proficiency in detecting hacking attacks and properly extracting evidence to report the crime and conduct audits to prevent future attacks. Topics include computer forensics in today's world; media and operating system forensics; data and file forensics; audits and investigations; and device forensics. This course prepares students for the following certification exam: EC-Council Computer Hacking Forensic Investigator. This course has no prerequisites.

This course covers the following competencies:

- *The graduate evaluates forensic investigations of physical and virtual devices that include routers, e-mail servers, mobile devices, and personal data assistants (PDAs).*
- *The graduate evaluates a forensic investigation on storage media and operating systems, including security and vulnerabilities.*
- *The graduate analyzes a network systems and file audit.*
- *The graduate evaluates a computer forensic investigation on stored data, including the use of tools and processes.*
- *The graduate evaluates a forensic investigation plan for modern information system assets, including legal requirements related to computer forensics.*

Disaster Recovery

Disaster Recovery Planning, Prevention and Response

This course prepares students to plan and execute industry best practices related to conducting organization-wide information assurance initiatives and to preparing an organization for implementing a comprehensive Information Assurance Management program.

This course covers the following competencies:

- *The graduate evaluates the background, purpose, and value of a comprehensive disaster recovery plan; integrates principles of disaster recovery and enterprise continuity; and documents the plans in a disaster recovery and enterprise continuity brief.*
- *The graduate identifies, evaluates, and applies network response procedures for attacks with special circumstances.*
- *The graduate assesses needs, threats, and solutions prior to and during a network disaster.*

Capstone

Information Security and Assurance Capstone Project

Students will be able to choose from three areas of emphasis, depending on personal and professional interests. Students will complete a capstone project that deals with a significant real-world business problem that further integrates the components of the degree. Capstone projects will require an oral defense before a committee of WGU faculty.

This course covers the following competencies:

- *The graduate integrates and synthesizes competencies from across the degree program, thereby demonstrating the ability to participate in and contribute value to the chosen professional field.*

Need More Information? WGU Student Services

WGU's Student Services team is dedicated exclusively to helping you achieve your academic goals. The Student Services office is available during extended hours to assist with general questions and administrative or accessibility issues. The Student Services team members help you resolve issues, listen to student issues and concerns, and make recommendations for improving policy and practice based on student feedback. The Student Services team provides a formal means by which you can express your views, which in turn will inform the decisions we make.

Student Services team members also assist with unresolved concerns to find equitable resolutions. To contact the Student Services team, please feel free to call 877-435-7948 or e-mail studentservices@wgu.edu. We are available Monday through Friday from 6:00 a.m. to 10:00 p.m., Saturday from 7:00 a.m. to 7:00 p.m., mountain standard time. Closed Sundays.

If you have inquiries or concerns that require technical support, please contact the WGU IT Service Desk. The IT Service Desk is available Monday through Friday, 6:00 a.m. to 10:00 p.m. and Saturday and Sunday, 10:00 a.m. to 7:00 p.m., mountain standard time. To contact the IT Service Desk, please call 1-877-HELP-WGU (877-435-7948) or e-mail servicedesk@wgu.edu. The support teams are generally closed in observance of university holidays.

For the most current information regarding WGU support services, please visit "Student Support" on the Student Portal at <http://my.wgu.edu>.