



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 it 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 2020. The WGU Teachers College is accredited at the initial-licensure level by the Council for the Accreditation of Educator Preparation (CAEP) and by the Association for Advancing Quality in Educator Preparation (AAQEP). 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
Secure Network Design	3	1
Information Security and Assurance	2	1
Cybersecurity Management I - Strategic	4	1
Cybersecurity Management II - Tactical	4	2
Ethical Hacking	4	2
Cybersecurity Architecture and Engineering	4	3
Forensics and Network Intrusion	4	3
Secure Software Design	2	4
Cybersecurity Graduate Capstone	3	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. 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.

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:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *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 recommends network segmentation strategies to isolate network segments based on business requirements and security concerns.*
- *The graduate performs root cause analysis to determine sources of network-related problems and propose solutions.*
- *The graduate designs secure network architectures based on industry best practices and the principles of secure network design.*

Cybersecurity Management II - Tactical

Cybersecurity Management II - Tactical provides students the opportunity to examine tactical cybersecurity management, which is the practice of addressing near-term cybersecurity goals within an enterprise. The tactical management process enables organizations to address unique cyber requirements throughout the organization. It deals with the people, processes, and technologies that are in use, and it primarily centers on the current operations of the enterprise. A range of cybersecurity tactical management topics are introduced in this course, including the tools, techniques, and concepts used to develop an effective cybersecurity program within organizations.

This course covers the following competencies:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate executes disaster recovery and business continuity plans and procedures.*
- *The graduate develops defense-in-depth practices to mitigate cybersecurity threats to organizations.*
- *The graduate manages IT security policies to support an effective cybersecurity operation within an organization.*
- *The graduate manages security assessment and testing tactics.*
- *The graduate manages detective and preventive security measures.*
- *The graduate coordinates the response to detected cybersecurity incidents.*

Secure Systems Analysis & Design

Information Security and Assurance

Information Security and Assurance explores the many facets of the information security landscape. Recognizing that there

are no universal solutions to issues related to information security and assurance, this course covers the durable security principles that help to drive sound decisions. Additionally, this course introduces well-accepted risk management principles that help to appropriately secure information assets. Finally, the course illustrates how a comprehensive library of policies, standards, and procedures are used to secure assets and provide the required levels of regulatory compliance. There are no prerequisites for this course.

This course covers the following competencies:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate determines components and applications of the information security and assurance functional areas.*
- *The graduate determines policies, standards, and procedures to satisfy an organization's regulatory and information security needs.*
- *The graduate applies risk management and incident management principles to prevent, detect, and respond to threats to information security.*

Cybersecurity Architecture and Engineering

Cybersecurity Architecture and Engineering prepares students to implement and manage security engineering tasks and processes using secure design principles grounded in positive security engineering. It covers the fundamental concepts of confidentiality and integrity security models along with applied cryptography for implementation of these models. Additionally, this course helps students assess and mitigate vulnerabilities found in security designs, architectures, and solutions. Finally, this course introduces techniques to design and implement physical security controls for data centers and other large implementations of IT. There are no prerequisites for this course.

This course covers the following competencies:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate designs technical specifications based on an organization's security requirements.*
- *The graduate identifies threats and vulnerabilities applicable to business systems and assets.*
- *The graduate assesses the vulnerabilities within the Internet of Things (IoT) and web-based, mobile, and embedded systems.*
- *The graduate designs a multi-level target security architecture to support the organization's security policy and technology choices and to include applicable policy guidance.*

Cybersecurity Management

Cybersecurity Management I - Strategic

Cybersecurity Management I - Strategic focuses on the strategic and long-term alignment of an organization's information security program to regulators and ensures that it is appropriate for the company culture and management organization. This course introduces the Basel Committee's four lines of defense model to appropriately implement separation of duties and information security roles and structures. Additionally, this course covers big-picture items (e.g., how risk management will be performed institutionally and how compliance to information security requirements will be managed). Finally, this course helps students apply strategic decision making as companies adapt to new technologies, processes, and people practices related to processing, managing, and protecting information resources.

This course covers the following competencies:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate develops security policy, standards, procedures, and guidelines to strategically secure an organization's assets.*
- *The graduate designs an organizational structure to support an information security policy.*
- *The graduate manages risk in the face of an ever-changing technology landscape.*
- *The graduate develops business continuity plans to maintain an organization's ability to perform its mission-critical tasks.*
- *The graduate manages compliance practices for cybersecurity and information assurance.*
- *The graduate manages the identity and access provisioning lifecycle to protect data and systems.*

- *The graduate evaluates organization-wide security controls to support continual improvement.*

Hacking

Ethical Hacking

Ethical Hacking helps students build 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. This course has no prerequisites.

This course covers the following competencies:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *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 open-source information gathering, network scanning, and enumerating targets.*
- *The graduate evaluates various network and system hacking 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.*
- *The graduate evaluates vulnerability assessment concepts and reporting processes.*
- *The graduate evaluates denial of service (DoS) techniques, intrusion detection systems (IDS), firewalls (FW), and honeypot concepts*
- *The graduate identifies session hijacking concepts and cryptography.*
- *The graduate evaluates techniques used in social engineering.*

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 has no prerequisites.

This course covers the following competencies:

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

Security

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:

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *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 implements security practices for development in order to honor the principles of “Building Security In.”*
- *The graduate assesses the effectiveness of software security controls in order to make adjustments as needed.*
- *The graduate evaluates software defects and vulnerabilities in order to develop strategies to remediate those defects and to prevent future occurrences.*

Capstone

Cybersecurity Graduate Capstone

The Master of Science in Cybersecurity and Information Assurance (MSCSIA) Capstone project allows students to demonstrate their capability to establish a durable cybersecurity and information assurance program. The capstone project challenges students to integrate skills and knowledge from all program domains into one project that deals with a significant real-world cybersecurity problem.

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.*

Accessibility and Accommodations

Western Governors University is committed to providing equal access to its academic programs to all qualified students. WGU's Accessibility Services team supports this mission by providing support, resources, advocacy, collaboration, and academic accommodations for students with disabilities and other qualifying conditions under the Americans with Disabilities Act (ADA). WGU encourages student to complete the Accommodation Request Form as soon as they become aware of the need for an accommodation. Current and prospective students can reach the Accessibility Services team Monday through Friday 8:00 a.m. to 5:00 p.m. MST at 1-877-HELP-WGU (877-435-7948) x5922 or at ADASupport@wgu.edu.

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 requests. 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.

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>.