WESTERN GOVERNORS UNIVERSITY

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Program Guidebook

Bachelor of Science, Cybersecurity and Information Assurance

To meet an increasing demand for cybersecurity professionals, the Bachelor of Science in Cybersecurity and Information Assurance (BSCSIA) degree program prepares IT professionals to apply knowledge and experience in risk management and digital forensics to safeguard infrastructure and secure data through continuity planning and disaster recovery operations. Courses deliver proven methods for information security using software analysis techniques, web engineering, cloud management, and networking strategies to prevent, detect, and mitigate cyberattacks. This program features nationally recognized, high demand certifications in the field of cybersecurity.

Understanding the Competency-Based Approach

Practically speaking, what does it mean when we say that WGU's programs are competency-based? Unlike traditional universities, WGU does not award degrees based on credit hours or on a certain set of required courses. Instead, you will earn your degree by demonstrating your skills, knowledge, and understanding of important concepts through a series of carefully designed courses.

Progress through your degree program is governed not by classes but by satisfactory completion of the required courses that demonstrate your mastery of the competencies. Of course, you will need to engage in learning experiences as you brush up on competencies or develop knowledge and skills in areas in which you may be weak. For this learning and development, WGU has a rich array of learning resources in which you may engage under the direction of your student mentor. You will work closely with your mentor to schedule your program for completing the courses. You will also work closely with additional faculty members as you proceed through courses of study that are designed to lead you through the content you must master in order to pass the assessment(s) for each course.

The benefit of this competency-based system is that it makes it possible for people who are knowledgeable about a particular subject to make accelerated progress toward completing a WGU 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, indeed, 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). 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 Informatics program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).

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.

Students will 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 may need to take an online class or participate in a study module to acquire the knowledge and skills needed to pass the 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, you will complete preassessments to help your mentor form a profile of your prior knowledge and experience for use in creating your personalized Degree Plan.

WGU's Mentoring Approach

The mentoring approach is a powerful component of the WGU educational experience. When you enroll at WGU, you will begin interacting with your student mentor, course mentors, and other support staff. Your student mentor will meet with you on a regular basis and take an active role and a personal interest in your success. Your student mentor will be your point of contact throughout your program and will be available to communicate with you via e-mail or phone. Your mentor will help you set weekly study goals, guide you to learning materials, help you understand what to expect in courses, and motivate you to work hard to complete your program. When you have questions or concerns, your mentor will help you resolve them.

As you work on each course, you will also be assigned course mentors. These course mentors are content experts who can discuss your learning for the course, help you find answers to content questions, and help you navigate the course successfully. Your course mentors are available to meet with you individually to provide personal support. You can also communicate with them by posting in the online learning community and participating in live discussion sessions such as webinars and cohorts.

Working closely with your own personal mentoring team will help you engage in the learning process and be a successful student while at WGU.

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 have interactions with faculty and other students.

The resources in each course are specifically designed to support you as you develop competencies in preparation for your assessments through the utilization of reading materials, videos, tutorials, cohort opportunities, community discussions, and live discussions that are guided by content experts. 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 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 student 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 eight (8) competency units each term, and undergraduate students must enroll in at least twelve (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.

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're 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* Bachelor of Science, Cybersecurity and Information Assurance

Course Description	CUs	Term
Introduction to IT	4	1
Critical Thinking and Logic	3	1
Fundamentals of Information Security	3	1
Introduction to Geography	3	1
Business of IT - Applications	4	2
Integrated Physical Sciences	3	2
Natural Science Lab	2	2
Web Development Foundations	3	2
Network and Security - Foundations	3	3
Intermediate Algebra	3	3
English Composition I	3	3
IT Foundations	4	3
IT Applications	4	4
Introduction to Communication	3	4
Networks	4	4
College Algebra	4	4
Scripting and Programming - Foundations	3	5
Managing Web Security	4	5
Network and Security - Applications	4	5
Introduction to Probability and Statistics	3	5
English Composition II	3	6
Managing Cloud Security	4	6
Data Management - Foundations	3	6
Data Management - Applications	4	6
Business of IT - Project Management	4	7
Introduction to Cryptography	4	7
Technical Communication	3	7
Digital Forensics in Cybersecurity	4	7
Legal Issues in Information Security	4	8
Cyber Defense and Countermeasures	4	8
Managing Information Security	6	8

Course Description	CUs	Term
Emerging Technologies in Cybersecurity	4	9
Information Systems Security	4	9
IT Capstone Written Project	4	9

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 returning from term break or returning after withdrawal from the university will be expected to re-enter the updated version of the program.

Areas of Study for Bachelor 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.

IT Fundamentals

Introduction to IT

This course introduces students to information technology as a discipline and the various roles and functions of the IT department as business support. Students are presented with various IT disciplines including systems and services, network and security, scripting and programming, data management, and business of IT, with a survey of technologies in every area and how they relate to each other and to the business.

This course covers the following competencies:

- *The graduate describes the structure, function, and security associated with networks.*
- *The graduate explains the structure and function of databases.*
- *The graduate describes IT as a discipline and discusses the history and future of computing as well as the currently used infrastructure.*
- *The graduate explains the role of technology in today's business environment and describes basic concepts of project management.*
- *The graduate identifies common software architectures, development techniques, and the relationship between software and its environment.*
- *The graduate describes information technology systems and their role in converting data to organizational knowledge.*
- *The graduate identifies the role of different types of software in a computing environment and explains the fundamentals of software development.*
- *The graduate evaluates ethical concerns involved in the use of technology.*
- *The graduate recognizes and describes functions of basic computer hardware components.*

IT Foundations

IT Foundations is the first course in a two-part series preparatory for the CompTIA A+ exam, Part I. Students will gain an understanding of personal computer components and their functions in a desktop system, as well as computer data storage and retrieval; classifying, installing, configuring, optimizing, upgrading, and troubleshooting printers, laptops, portable devices, operating systems, networks, and system security; recommending appropriate tools, diagnostic procedures, preventative maintenance and troubleshooting techniques for personal computer components in a desktop system; strategies for identifying, preventing, and reporting safety hazards and environmental/human accidents in a technological environments; and effective communication with colleagues and clients as well as job-related professional behavior.

This course covers the following competencies:

- *The graduate recommends appropriate strategies for classifying, installing, configuring, optimizing, and upgrading basic network types.*

- *The graduate recommends appropriate strategies for classifying, installing, configuring, optimizing, upgrading, and troubleshooting laptops and mobile devices.*
- *The graduate recommends appropriate strategies for classifying, installing, configuring, optimizing, upgrading, and troubleshooting printers.*
- *The graduate demonstrates an understanding of personal computer components and their function in a desktop system.*
- *The graduate demonstrates a basic working knowledge of computer data storage and information retrieval.*

IT Applications

IT Applications is a continuation of the IT Foundations course preparatory for the CompTIA A+ exam, Part II. Students will gain an understanding of personal computer components and their functions in a desktop system. Also covered is computer data storage and retrieval, including classifying, installing, configuring, optimizing, upgrading, and troubleshooting printers, laptops, portable devices, operating systems, networks, and system security. Other areas include recommending appropriate tools, diagnostic procedures, preventative maintenance and troubleshooting techniques for personal computer components in a desktop system. The course then finished with strategies for identifying, preventing, and reporting safety hazards and environmental/human accidents in a technological environments, and effective communication with colleagues and clients as well as job-related professional behavior.

This course covers the following competencies:

- *The graduate recommends appropriate strategies for classifying, controlling access, setting permission, configuring, optimizing, and upgrading basic system security.*
- *The graduate recommends appropriate strategies for classifying, installing, configuring, optimizing, upgrading, and troubleshooting laptops, tablets, and mobile devices.*
- *The graduate recommends appropriate strategies for classifying, installing, configuring, optimizing, upgrading, and troubleshooting computer operating systems.*
- *The graduate recommends appropriate tools, diagnostic procedures, preventive maintenance, and troubleshooting techniques for personal computer components in a desktop system.*

General Education

Critical Thinking and Logic

Reasoning and Problem Solving helps students internalize a systematic process for exploring issues that takes them beyond an unexamined point of view and encourages them to become more self-aware thinkers by applying principles of problem identification and clarification, planning and information gathering, identifying assumptions and values, analysis and interpretation of information and data, reaching well-founded conclusions, and identifying the role of critical thinking in the disciplines and professions.

This course covers the following competencies:

- *The graduate recognizes the value of critical thinking in identifying and understanding the underlying structures of the disciplines and professions.*
- *The graduate evaluates different sources representing a range of perspectives on a problem in order to weigh the implications and consequences of different solutions to the problem.*
- *The graduate synthesizes information to understand a problem's complexities and potential solutions, and then evaluates the reasoning and evidence in support of these different solutions.*
- *The graduate identifies internal and external biases and assumptions related to a problem, and evaluates the influence and validity of these biases and assumptions.*
- *The graduate logically brings together information to arrive at a viable solution to a problem, and then clearly and accurately communicates the results.*

- *The graduate analyzes open-ended problems by learning about the problem and evaluating the accuracy and relevance of different perspectives on the problem.*

Introduction to Geography

This course will discuss geographic concepts, places and regions, physical and human systems and the environment.

This course covers the following competencies:

- *The graduate can describe and discuss fundamental concepts in geography.*
- *The graduate can describe and discuss environment.*
- *The graduate can describe and discuss human systems.*
- *The graduate can describe and discuss physical systems.*
- *The graduate can describe and discuss places and regions.*

Integrated Physical Sciences

This course provides students with an overview of the basic principles and unifying ideas of the physical sciences: physics, chemistry, and Earth sciences. Course materials focus on scientific reasoning and practical and everyday applications of physical science concepts to help students integrate conceptual knowledge with practical skills.

This course covers the following competencies:

- *The graduate describes the underlying organization, interactions, and processes within the Earth system including the Earth's structure and atmosphere, and Earth's interactions within the solar system.*
- *The graduate describes the nature and process of science.*
- *The graduate examines applications of physics including fundamental concepts such as forces, motion, energy, and waves.*
- *The graduate examines applications of key chemistry concepts including the structure of matter and the behavior and conservation of matter in chemical reactions.*

Natural Science Lab

This course gives you an introduction to using the scientific method and engaging in scientific research to reach conclusions about the natural world. You will design and carry out an experiment to investigate a hypothesis by gathering quantitative data.

This course covers the following competencies:

- *The graduate accurately executes the process of scientific inquiry through experimentation in the natural world.*
- *The graduate draws conclusions based on academic research and scientific inquiry.*
- *The graduate evaluates academic sources for their credibility and relevance to a chosen research topic on a natural world phenomenon.*

Intermediate Algebra

This course provides an introduction of algebraic concepts and the development of the essential groundwork for College Algebra. Topics include: A review of basic mathematical skills, the real number system, algebraic expressions, linear equations, graphing, exponents and polynomials

This course covers the following competencies:

- *The graduate solves linear equations and applications.*
- *The graduate translates, simplifies, and evaluates algebraic expressions.*

- *The graduate determines absolute values, adds and subtracts integers, multiplies and divides real numbers, and determines whether or not a particular integer is a solution.*
- *The graduate graphs ordered pairs and lines on the Cartesian coordinate system.*
- *The graduate identifies, evaluates, and multiplies exponents and polynomials.*

English Composition I

This course introduces learners to the types of writing and thinking that is valued in college and beyond. Students will practice writing in several genres and several media, with emphasis placed on writing and revising academic arguments. The course contains supporting media, articles, and excerpts to support a focus on one of five disciplinary threads (covering the topics of nursing, business, information technology, teaching, and literature, art, and culture) designed to engage students and welcome them into discussion about contemporary issues. The course supports peer review activities, though it may be completed asynchronously as well. Instruction and exercises in grammar, mechanics, research documentation, and style are paired with each module so that writers can practice these skills as necessary. This course includes full access to the MindEdge Writing Pad to support student writing and coaching sessions.

This course covers the following competencies:

- *The graduate integrates credible and relevant sources into written arguments.*
- *The graduate uses appropriate writing and revision strategies*
- *The graduate composes an appropriate argumentative essay for a given context.*
- *The graduate composes an appropriate narrative for a given context.*
- *The graduate appropriately uses a given writing style.*
- *The graduate selects appropriate rhetorical strategies that improve writing and argumentation.*
- *The graduate applies appropriate grammatical rules, sentence structure, and writing conventions.*

Introduction to Communication

This introductory communication course allows students to become familiar with the fundamental communication theories and practices necessary to engage in healthy professional and personal relationships. Students will survey human communication on multiple levels and critically apply the theoretical grounding of the course to interpersonal, intercultural, small group, and public presentational contexts. The course also encourages students to consider the influence of language, perception, culture, and media on their daily communicative interactions. In addition to theory, students will engage in the application of effective communication skills through systematically preparing and delivering an oral presentation. By practicing these fundamental skills in human communication, students become more competent communicators as they develop more flexible, useful, and discriminatory communicative practices in a variety of contexts.

This course covers the following competencies:

- *The graduate applies foundational elements of effective communication.*
- *The graduate applies appropriate communication strategies in interpersonal and group contexts*
- *The graduate utilizes appropriate presentational communication strategies in personal and professional settings.*

College Algebra

This course provides further application and analysis of algebraic concepts and functions through mathematical modeling of real-world situations. Topics include: real numbers, algebraic expressions, equations and inequalities, graphs and functions, polynomial and rational functions, exponential and logarithmic functions, and systems of linear equations.

This course covers the following competencies:

- *The graduate simplifies and factors polynomial expressions, and solves polynomial equations.*
- *The graduate solves systems of linear equations and their related applications.*

- *The graduate simplifies rational, radical, and quadratic expressions, solves corresponding equations, and extends this knowledge to the study of functions.*
- *The graduate combines functions, finds inverse functions, solves exponential and logarithmic equations and functions.*
- *The graduate classifies and performs operations on real numbers; solves linear equations and inequalities; connects a linear equation to its graph; and identifies a function.*

Introduction to Probability and Statistics

In this course, students demonstrate competency in the basic concepts, logic, and issues involved in statistical reasoning. Topics include summarizing and analyzing data, sampling and study design, and probability.

This course covers the following competencies:

- *The graduate applies theoretical or empirical probability to a situation to quantify uncertainty.*
- *The graduate evaluates the sampling methods used in studies including the effect they have on conclusions that can be made.*
- *The graduate evaluates the relationship between two variables through the creation and interpretation of numerical summaries and visual displays.*
- *The graduate determines the probability of events using simulations, diagrams, and probability rules.*
- *The graduate evaluates categorical and quantitative data using appropriate numerical measures and graphical displays.*
- *The graduate designs and conducts observational studies, controlled experiments, and surveys to explore population characteristics.*

English Composition II

English Composition II introduces undergraduate students to research writing. It is a foundational course designed to help students prepare for advanced writing within the discipline and to complete the capstone. Specifically, this course will help students develop or improve research, reference citation, document organization, and writing skills. English Composition I or equivalent is a prerequisite for this course.

This course covers the following competencies:

- *The graduate applies steps of the writing process appropriately to improve quality of writing.*
- *The graduate composes an argumentative research paper.*
- *The graduate evaluates the quality, credibility, and relevance of evidence in order to integrate evidence into a final research paper.*

Secure Systems Analysis & Design

Fundamentals of Information Security

This course lays the foundation for understanding terminology, principles, processes and best practices of information security at local and global levels. It further provides an overview of basic security vulnerabilities and countermeasures for protecting information assets through planning and administrative controls within an organization.

This course covers the following competencies:

- *The graduate identifies how security principles and cyber defense concepts impact organizational policies and practices.*
- *The graduate identifies how confidentiality, integrity, and availability define security requirements for an organization.*
- *The graduate identifies guidelines in privacy and compliance as applied to cybersecurity.*

- *The graduate identifies security principles and cyber defense concepts that have been violated in common security failures.*
- *The graduate identifies security principles and cyber defense concepts to protect an organization's assets.*
- *The graduate defines security principles and cyber defense concepts to support security practices within an organization.*

Information Systems Security

IT security professionals must be prepared for the operational demands and responsibilities of security practitioners, including authentication, security testing, intrusion detection and prevention, incident response and recovery, attacks and countermeasures, cryptography, and malicious code countermeasures. This course provides a comprehensive, up-to-date global body of knowledge that ensures students have the right information security knowledge and skills to be successful in IT operational roles to mitigate security concerns and guard against the impact of malicious activity. Students demonstrate how to manage and restrict access control systems; administer policies, procedures, and guidelines that are ethical and compliant with laws and regulations; implement risk management and incident handling processes; execute cryptographic systems to protect data; manage network security; and analyze common attack vectors and countermeasures to assure information integrity and confidentiality in various systems. This course prepares students for the Systems Security Certified Practitioner (ISC2 SSCP) certification exam.

This course covers the following competencies:

- *The graduate evaluates security concerns with countermeasures to guard against the impact of malicious activity to end-point device security, virtualization, cloud, and large-scale distributed systems.*
- *The graduate proposes security risks mitigations processes to identify, evaluate, prioritize, and prevent potential security threats.*
- *The graduate manages control access to privileged, confidential, or proprietary resources.*
- *The graduate defends the security of a network by maintaining the confidentiality, integrity, and availability (CIA) of the information transmitted over communication networks.*
- *The graduate evaluates security operations concepts, and policies to ensure the confidentiality, integrity, and availability of information assets is applied.*
- *The graduate evaluates security incident handling plans to protect and preserve organization assets and data.*
- *The graduate evaluates cryptographic systems and operations to protect data security.*

Business of IT

Business of IT - Applications

Business of IT – Applications examines Information Technology Infrastructure Library (ITIL®) terminology, structure, policies, and concepts. Focusing on the management of Information Technology (IT) infrastructure, development, and operations, students will explore the core principles of ITIL practices for service management to prepare them for careers as IT professionals, business managers, and business process owners. This course has no prerequisites.

This course covers the following competencies:

- *The graduate analyzes service management processes and the process model in order to effectively deliver IT services to customers.*
- *The graduate describes the various processes central to IT service management in order to contextualize each process within an organization's overarching service management approach.*
- *The graduate analyzes how the ITIL Service Lifecycle's integrated approach provides value to organizations in order to work effectively on IT teams.*
- *The graduate describes the service desk function, the technical management function, the application management function, and the IT operations management function in order to contextualize each function within an organization's*

overarching service management approach.

- *The graduate deconstructs service management, service design, and continual service improvement in order to optimize service value for customers and organizations.*
- *The graduate analyzes how different roles and responsible, accountable, consulted, and informed characterizations work together in order to understand the opportunities and constraints the graduate is likely to experience when working on teams in a service management workplace.*
- *The graduate articulates service management concepts with ITIL vocabulary in order to effectively communicate about IT service management in the workplace.*

Business of IT - Project Management

In this course, students will build on industry standard concepts, techniques, and processes to develop a comprehensive foundation for project management activities. During a project's life cycle, students will develop the critical skills necessary to initiate, plan, execute, monitor, control, and close a project. Students will apply best practices in areas such as scope management, resource allocation, project planning, project scheduling, quality control, risk management, performance measurement, and project reporting. This course prepares students for the following certification exam: CompTIA Project+.

This course covers the following competencies:

- *The graduate determines project tools and documentation methods to measure and monitor project performance.*
- *The graduate applies communication methods and change control processes to maintain clarity of project plans, activities, and changes for stakeholders.*
- *The graduate determines the impact of project constraints and influences to manage risk.*
- *The graduate applies key project management processes to guide business initiatives.*

Web Development

Web Development Foundations

This course introduces students to web design and development by presenting them with HTML5 and CSS, the foundational languages of the web, by reviewing media strategies, and by using tools and techniques commonly employed in web development.

This course covers the following competencies:

- *The graduate develops a plan for creating and maintaining a website that addresses specific business needs while maintaining industry and ethical standards.*
- *The graduate creates web pages using a GUI editor as well as basic HTML5 and CSS 3 elements.*

Network and Security

Network and Security - Foundations

Network and Security - Foundations introduces students to the components of a computer network and the concept and role of communication protocols. The course will cover widely used categorical classifications of networks (i.e. LAN, MAN, WAN, PAN, and VPN) as well as network topologies, physical devices, and layered abstraction. The course will also introduce students to basic concepts of security covering vulnerabilities of networks and mitigation techniques, security of physical media, and security policies and procedures.

This course covers the following competencies:

- *The graduate identifies the functional and technical components of network systems.*
- *The graduate identifies the basic concepts essential to network security.*
- *The graduate identifies the basic concepts essential to networking.*

Networks

Networks focuses on: network topologies including: protocols, ports, addressing schemes, routing, and wireless communication standards; physical and logical topologies, including wiring standards; differentiating, installing, and configuring network devices; and troubleshooting network connectivity. This course prepares students for the following certification exam: CompTIA Network+.

This course covers the following competencies:

- *The graduate distinguishes and explains network topologies, including protocols, ports, addressing schemes, routing, and wireless communication standards.*
- *The graduate differentiates and explains network security devices and methods for troubleshooting common security threats.*
- *The graduate differentiates and installs/configures network devices.*
- *The graduate identifies appropriate methodologies for troubleshooting network connectivity and performance issues in a given network environment.*
- *The graduate differentiates and explains physical and logical topologies, including wiring standards.*
- *The graduate uses hardware and software utilities to track and maintain network performance in optimized state.*

Network and Security - Applications

This course prepares students for the following certification exam: CompTIA Security+.

This course covers the following competencies:

- *The graduate identifies security needs and recommends appropriate security practices for network infrastructures.*
- *The graduate evaluates risks associated with network security and recommends monitoring strategies and methods.*
- *The graduate recommends appropriate methods for controlling accessing data and information and for authenticating users and groups in gaining that access.*
- *The graduate identifies and explains the role of encryption in network security.*
- *The graduate identifies and discusses basic concepts of security and security threats, and recommends security procedures.*
- *The graduate explains and makes recommendations for appropriate security strategies and procedures for organizational operations.*

Scripting and Programming

Scripting and Programming - Foundations

This course provides an introduction to programming covering data structures, algorithms, and programming paradigms. The course presents the student with the concept of an object as well as the object-oriented paradigm and its importance. A survey of languages is covered and the distinction between interpreted and compiled languages is introduced.

This course covers the following competencies:

- *The graduate integrates the object-oriented programming paradigm in scripting and programming.*
- *The graduate performs basic computer programming including working with data types, constants, variables, operator types, expressions, and functions.*
- *The graduate implements basic constructs of programming, including working with control structures.*
- *The graduate describes steps of the design process.*
- *The graduate analyzes algorithms, including algorithm efficiency, and recursion.*

- *The graduate compares various programming languages.*

Web and Cloud Security

Managing Web Security

Almost all businesses and organizations require a web presence. The security needs, demands, and defenses for these online environments differ from those of an isolated single computer or intranet. This course introduces best practices for preventing security breaches by applying web security protocols, firewalls, and system configurations. This course prepares students for the Web Security Associate (CIW WSA) certification exam.

This course covers the following competencies:

- *The graduate describes firewall types and common firewall terminology.*
- *The graduate defines encryption and its application in information security.*
- *The graduate creates effective network solutions using principles of effective network security to protect an organization's assets and data.*
- *The graduate explains the significance of network security, and various elements of an effective security policy determined through risk assessment.*
- *The graduate applies security defense principles when identifying security attacks.*
- *The graduate configures a firewall system that incorporates multiple levels of protection to secure an organization's assets and data.*

Managing Cloud Security

Many of today's companies and organizations have outsourced data management, availability, and operational processes through cloud computing. In this course, students design solutions for cloud-based platforms and operations that maintain data availability while protecting the confidentiality and integrity of information. This includes security controls, disaster recovery plans, and continuity management plans that address physical, logical, and human factors. This course prepares students for the Certified Cloud Security Professional (ISC2 CCSP) certification exam.

This course covers the following competencies:

- *The graduate evaluates secure cloud data solutions to safeguard data, personally identifiable information, and information resources.*
- *The graduate manages the critical requirements of cloud architecture to build and run that infrastructure.*
- *The graduate describes legal and compliance requirements of cloud operations to protect the organization and ensure ethical behavior.*
- *The graduate examines security in cloud software to improve security and define secure procedures.*
- *The graduate validates security controls, disaster recovery plans, and continuity management plans to ensure a secure infrastructure for the protection and restoral of information resources.*
- *The graduate critiques plans to secure and manage physical and virtual infrastructures for legal and secure cloud operations.*

Data Management

Data Management - Foundations

This course introduces students to the concepts and terminology used in the field of data management. They will be introduced to Structured Query Language (SQL) and will learn how to use Data Definition Language (DDL) and Data Manipulation Language (DML) commands to define, retrieve, and manipulate data. This course covers differentiations of data—structured vs. unstructured and quasi-structured (relational, hierarchical, XML, textual, visual, etc); it also covers aspects of data management (quality, policy, storage methodologies). Foundational concepts of data security are included.

This course covers the following competencies:

- *The graduate explains how data, databases, and data management are used in today's organizations.*
- *The graduate analyzes the relational model of data.*
- *The graduate interprets the concepts of analytical processing within the context of business intelligence.*
- *The graduate implements SQL concepts and coding.*
- *The graduate demonstrates appropriate strategies to normalize data.*
- *The graduate demonstrates an understanding of the concepts involved in the modeling of data.*

Data Management - Applications

This course covers conceptual data modeling and provides an introduction to MySQL. Students will learn how to create simple to complex SELECT queries including subqueries and joins, and will also learn how to use SQL to update and delete data. Topics covered in this course include exposure to MySQL; developing physical schemas; creating and modifying databases, tables, views, foreign keys/primary keys (FKs/PKs), and indexes; populating tables; and developing simple Select-From-Where (SFW) queries to complex 3+ table join queries.

This course covers the following competencies:

- *The graduate creates conceptual data models and translates them into physical schemas.*
- *The graduate writes code to create and modify tables and views employing SQL Data Definition Language (DDL) in MySQL environment.*
- *The graduate creates simple Select-From-Where (SFW) and complex 3+ table join queries with Data Manipulation Language (DML) in MySQL environment.*
- *The graduate populates tables with insert, update, and delete using DML in MySQL environment.*
- *The graduate creates databases utilizing SQL Data Definition Language (DDL) in MySQL environment.*
- *The graduate writes code to create and modify Primary Keys (PKs) and Foreign Keys (FKs) and Indexes with SQL Data Definition Language (DDL) in MySQL environment.*

Information Assurance

Introduction to Cryptography

This course provides students with knowledge of cryptographic algorithms, protocols, and their uses in the protection of information in various states. This course prepares students for the Certified Encryption Specialist (EC-Council ECES) certification exam.

This course covers the following competencies:

- *The graduate compares types of Encryption Standards.*
- *The graduate performs encryption with symmetric and asymmetric algorithms.*
- *The graduate details cryptanalysis techniques.*
- *The graduate describes applications of cryptography and their supporting attributes.*

Technical Writing

Technical Communication

This course covers basic elements of technical communication, including professional written communication proficiency; the ability to strategize approaches for differing audiences; and technical style, grammar, and syntax proficiency.

This course covers the following competencies:

- *The graduate creates various technically written artifacts using appropriate technical communication concepts.*
- *The graduate integrates basic elements of technical communication, including audience analysis, the writing process, correct grammar, and appropriate design elements.*
- *The graduate makes strategic and appropriate communication decisions based on the audience.*

Digital Forensics and Incident Response

Digital Forensics in Cybersecurity

Digital forensics, the science of investigating cybercrimes, seeks evidence that reveals who, what, when, where, and how threats compromise information. This course examines the relationships between incident categories, evidence handling, and incident management. Students identify consequences associated with cyber threats and security laws using a variety of tools to recognize and recover from unauthorized, malicious activities.

This course covers the following competencies:

- *The graduate describes digital forensics procedures from the initial recognition of an incident through the steps of evidence gathering, preservation, analysis, and through the completion of legal proceedings.*
- *The graduate conducts analysis on gathered evidence using forensic cyber tools to determine the nature of a security breach.*
- *The graduate identifies common methods and concepts for password cracking, email tracking, file logging, and mobile forensics.*
- *The graduate identifies steganography and its techniques as it relates to concealed data.*
- *The graduate executes recovery procedures for deleted data.*
- *The graduate identifies laws, rules, policies, and procedures that affect digital forensics.*
- *The graduate identifies types of digital evidence, digital evidence examination rules, and digital evidence consideration by crime category.*

Ethics & Cyber Law

Legal Issues in Information Security

Security information professionals have the role and responsibility for knowing and applying ethical and legal principles and processes that define specific needs and demands to assure data integrity within an organization. This course addresses the laws, regulations, authorities, and directives that inform the development of operational policies, best practices, and training to assure legal compliance and to minimize internal and external threats. Students analyze legal constraints and liability concerns that threaten information security within an organization and develop disaster recovery plans to assure business continuity.

This course covers the following competencies:

- *The graduate outlines legal issues that should be included within the security awareness training and education program of an organization.*
- *The graduate analyzes applicable laws and policies to legally protect the organization against security incidents.*
- *The graduate describes the legal requirements to address compliance with cybersecurity policies and procedures within an organization.*
- *The graduate discusses the implications of ethical issues for specific cybersecurity actions within an organization.*

Hacking Countermeasures and Techniques

Cyber Defense and Countermeasures

Traditional defenses such as firewalls, security protocols, and encryption sometimes fail to stop attackers determined to access and compromise data. This course provides the fundamental skills to handle and respond to the computer security incidents in an information system. The course addresses various underlying principles and techniques for detecting and responding to current and emerging computer security threats. Students learn how to handle various types of incidents, risk assessment methodologies, and various laws and policy related to incident handling. This course prepares students for the Certified Incident Handler (EC-Council ECIH) certification exam.

This course covers the following competencies:

- *The graduate describes steps in detecting and preventing insider threats.*
- *The graduate describes malicious codes and methods of its incident containment and prevention.*
- *The graduate describes the role of forensics analysis in incident response and prevention plan.*
- *The graduate defines the purpose, protocol, and functions of a Computer Security Incident Response Team (CSIRT).*
- *The graduate describes the principles of incident recovery and continuity planning in order to evaluate business impact.*
- *The graduate distinguishes the purpose and elements of a security policy in order to comply with the laws and regulations related to handling a security incident.*
- *The graduate identifies key concepts of information security and incident categories.*
- *The graduate describes steps in incident response and handling procedures.*
- *The graduate applies NIST's risk assessment methodology to conduct IT risk assessment.*
- *The graduate describes the purpose, key elements, and procedure for creating an incident report.*
- *The graduate describes security incident types and procedures for handling them.*

Risk Management

Managing Information Security

This course expands on fundamentals of information security by providing an in-depth analysis of the relationship between an information security program and broader business goals and objectives. Students develop knowledge and experience in the development and management of an information security program essential to ongoing education, career progression, and value delivery to enterprises. Students apply best practices to develop an information security governance framework, analyze mitigation in the context of compliance requirements, align security programs with security strategies and best practices, and recommend procedures for managing security strategies that minimize risk to an organization.

This course covers the following competencies:

- *The graduate develops security incident response plans that align to an organization's security goals and objectives and maintain business continuity.*
- *The graduate recommends modifications to established information security governance to increase information assurance levels within an organization.*
- *The graduate recommends changes to established security management programs in response to a cyber-related incident on an organization.*
- *The graduate recommends risk mitigation strategies that meet regulatory and ethical compliance.*

Wireless & Mobile Technologies

Emerging Technologies in Cybersecurity

The continual evolution of technology means that cybersecurity professionals must be able to analyze and evaluate new technologies in information security such as wireless, mobile, and internet technologies. Students review the adoption

process which prepares an organization for the risks and challenges of implementing new technologies. This course focuses on comparison of evolving technologies to address the security requirements of an organization. Students learn underlying principles critical to the operation of secure networks and adoption of new technologies.

This course covers the following competencies:

- *The graduate determines how to address vulnerabilities and threats in cellular and mobile network technologies.*
- *The graduate executes network mapping and monitoring procedures using industry-standard software for identifying vulnerabilities and threats.*
- *The graduate determines how to address vulnerabilities and threats in wireless architectures.*

Capstone

IT Capstone Written Project

The capstone project consists of a technical work proposal, the proposal's implementation, and a post-implementation report that describes the graduate's experience in developing and implementing the capstone project. The capstone project should be presented and approved by the mentor in relation to the graduate's technical emphasis.

This course covers the following competencies:

- *The graduate integrates and synthesizes competencies from across the degree program and thereby demonstrates 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.