Program Guidebook

Bachelor of Science, AI Infrastructure and Operations

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The BS in AI Infrastructure & Operations prepares IT professionals to build, deploy, and operate the infrastructure layer that AI systems run on—the servers, networks, and platforms behind every model and application. As organizations race to build AI capabilities, this program fills a gap most AI-related degrees don't address: the operational expertise needed to actually run these systems in production. The program builds on a core IT curriculum in networking, cloud computing, and security, then layers in specialized coursework in AI infrastructure configuration, compute resource management, and systems automation. Students learn to optimize systems for efficiency, security, and sustainability, evaluate the growing market of tools available for these needs, and communicate technical infrastructure decisions to organizational stakeholders. Coursework and assessments are designed around real workforce scenarios, preparing graduates to step directly into infrastructure roles without a gap between classroom and job. Students seeking the BS in AI Infrastructure & Operations degree also have the opportunity to earn an industry-recognized third-party certification in AI infrastructure and operations, further distinguishing their skill set from adjacent cloud and network engineering roles and supporting their readiness for the infrastructure jobs the AI era is creating.

Understanding the Competency-Based Approach

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

Progress through a degree program is measured not by the amount of time you spend in class but by your ability to demonstrate competency as you complete required courses along a Standard Path. To help you acquire the knowledge and skills you need to demonstrate competency and 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 your program's requirements and help you create a plan for completing your courses. You will also work closely with course instructors as you engage in each course. As subject matter experts, course instructors will guide you through the content you must learn to demonstrate competency through 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 you possess and can demonstrate—not the number of hours spent in a classroom.

Accreditation

Western Governors University is the only university in the history of American higher education to have earned initial accreditation from multiple regional accrediting commissions at once—earning simultaneous accreditation from ACCJC, HLC, NWCCU, and WASC. The university’s accreditation from the Northwest Commission on Colleges and Universities (NWCCU) was reaffirmed in March of 2024. In addition to institution-level accreditation, each school has at least one program that is accredited by a programmatic accreditation. All programmatic accreditations are managed by the Academic Engagement department. Contact compliance@wgu.edu for additional information.

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.

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 will introduce you to the fundamentals of WGU’s competency-based education (CBE) and the expectations, policies, and protocols for students enrolled in a WGU degree program. Orientation will introduce you to WGU’s wide range of support resources and success centers. It also will provide you with study strategies recommended by current students and faculty that will help you succeed as a WGU student. Orientation ends with your first assessment at WGU, providing an opportunity to experience WGU’s performance assessment process before you begin your degree-focused coursework. 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. WGU undergraduate programs may accept transfer credits or apply a 'Requirement Satisfied' (RS) in some cases. Refer to your specific program transfer guidelines to determine what can be satisfied by previously earned college credits. Students entering graduate programs must have their undergraduate degree transcripts verified before being admitted to WGU. In addition to a program's standard course path, there may be additional state-specific requirements.

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 onthe 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 must demonstrate your skills and knowledge by completing each course's assessment(s). You may be asked to demonstrate competency in a course in several different ways, including proctored exams, projects, essays, research papers, and simulations, among others. Certifications verified through third parties may also be included in your program as a way to demonstrate competency. More detailed information about each assessment is provided in the 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 Resource Fee. They can be accessed or enrolled for through your courses. Some degree-specific resources may not be 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 Student Handbook article provides additional details about the current state of mobile compatibility for learning resources at WGU.

Mobile Access 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, AI Infrastructure and Operations

Course Title	CUs	Term
Introduction to IT	3	1
Ethics in Technology	3	1
Composition: Successful Self-Expression	3	1
Technical Communication	3	1
Linux Foundations	3	2
Health, Fitness, and Wellness	4	2
US History: Stories of American Democracy	3	2
Network and Security - Foundations	3	2
Networks	4	3
Network Analytics and Troubleshooting	3	3
Software Defined Networking	3	3
Applied Probability and Statistics	3	3
Version Control	1	4
Foundations of Programming (Python)	3	4
Introduction to AI Coding Assistants	2	4
Python for IT Automation	3	4
Virtualization and IaaS	3	4
Cloud Foundations	3	5

Cloud AI Systems and Security	3	5
Introduction to AI on Hyperscalers	3	5
Applied Algebra	3	5
Foundations of AI Infrastructure	3	6
Applied Cloud Architecture	3	6
Cloud Deployment and Operations	3	6
Sustainable AI	3	6
Cloud and Network Security Models	4	7
Network and Security - Applications	4	7
Hybrid Cloud Infrastructure and Orchestration	4	7
Containerization	3	8
Continuous Integration and Continuous Deployment	3	8
Integrated Physical Sciences	3	8
Introduction to Systems Thinking and Applications	3	8
AI Workloads and Orchestration	3	9
ML DevSecOps	4	9
Influential Communication through Visual Design and Storytelling	3	9
Content Delivery Networks and Global Infrastructure	3	9

American Politics and the US Constitution	3	10
Cloud Cost Management and FinOps	4	10
High-Performance Computing	3	10
AI Infrastructure and Operations Capstone	4	10
Total CUs	125	

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 Bachelor of Science, AI Infrastructure and Operations

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

Introduction to IT introduces the fundamental concepts, structures, and roles of information technology (IT) within an organization. The course is structured to provide a comprehensive understanding of the various aspects of IT, including networking, database management, cybersecurity, artificial intelligence (AI), and software development. This course also explores the essential components of the typical technology infrastructure for various types of organizations, the role and interaction of each component, and the evolving nature of technology and its implications for business 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 learner describes a company's technology infrastructure and the role of each component.*
- *The learner describes the areas of IT and their functions within an organization.*
- *The learner explains the evolving nature of technology and its implications for business and IT practices.*

Foundations of Programming (Python)

Foundations of Programming (Python) introduces students to the fundamental principles of programming using Python. This course is designed to equip students with the essential skills needed to write, troubleshoot, and debug simple Python programs. Students will explore the syntax and structure of Python, develop an understanding of variables, loops, and conditional statements, and learn to work within different development environments, including integrated development environments (IDEs) and text editors. By the end of the course, students will be able to create functional Python programs, manipulate data structures, and apply debugging techniques across various platforms. 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 learner creates functional programs by writing and debugging code.*
- *The learner executes Python code in different development environments.*
- *The learner identifies basic Python programming constructs to create simple functions.*
- *The learner manipulates data structures to effectively store, retrieve, and process data.*

General Education

Ethics in Technology

Ethics in Technology examines the ethical considerations of technology use in the 21st century and introduces students to a decision-making process informed by ethical frameworks. Students will study specific cases related to important topics such as surveillance, social media, hacking, data manipulation, plagiarism and piracy, artificial intelligence, responsible innovation, and the digital divide. 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 learner describes ethical issues regarding data privacy, accuracy, access, and security.*
- *The learner explains professional ethical codes and their role in guiding professional behavior.*
- *The learner identifies interventions for personal bias and related legal concerns.*
- *The learner implements ethical decision-making frameworks in the information age.*

Composition: Successful Self-Expression

Welcome to Composition: Successful Self-Expression! In this course, you will focus on four main topics: professional writing for a cross-cultural audience, narrowing research topics and questions, researching for content to support a topic, and referencing research sources. Each section includes learning opportunities through readings, videos, audio, and other relevant resources. Assessment activities with feedback also provide opportunities to check your learning, practice, and show how well you understand course content. Because the course is self-paced, you may move through the material as quickly or as slowly as you need to gain proficiency in the seven competencies that will be covered in the final assessment. If you have no prior knowledge or experience, you can expect to spend 30-40 hours on the course content. You will demonstrate competency through a performance assessment. There is no prerequisite for this course and there is no specific technical knowledge needed.

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 learner composes a written message with language appropriate for cross-cultural communication.*
- *The learner incorporates research to support a position or idea.*
- *The learner incorporates self-expression in written communication.*
- *The learner researches valid and reliable sources.*
- *The learner writes a message using an effective communication approach for a given situation.*
- *The learner writes a reference list.*
- *The learner writes in a professional manner for a given scenario.*

Technical Communication

Technical Communication introduces skills in editing professional communications, evaluating the impact of professional etiquette in digital environments, and in creating artifacts that are persuasive, informational, and research-based. The course also introduces skills in delivering multimedia presentations using professional verbal communication skills.

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 learner creates technical artifacts that are persuasive, informational, and research based.*
- *The learner delivers presentations with professional verbal communication skills and multimedia.*
- *The learner edits corporate communications for proper grammar and punctuation.*
- *The learner evaluates the impact of business etiquette and communication in digital environments.*

Health, Fitness, and Wellness

Health, Fitness, and Wellness focuses on the importance and foundations of good health and physical fitness, particularly for children and adolescents. This course addresses health, nutrition, and fitness, and substance use and abuse.

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 identifies factors that influence mental, emotional, and social wellness.*
- *The graduate identifies the application of the core competencies of social and emotional learning.*
- *The graduate identifies the influence of disease, fitness, and lifestyle on the body.*
- *The graduate identifies the principles of nutrition and the components of a healthy diet.*

US History: Stories of American Democracy

This course presents a broad survey of U.S. history from early colonization to the mid-twentieth century. The course explores how historical events and major themes in American history have affected diverse populations, influenced changes in policy an established the American definition of democracy. This course consists of an introduction and five major sections. Each section includes learning opportunities through reading, images, videos, and other relevant resources. Assessment

activities with feedback also provide opportunities to practice and check how well you understand the content. Because the course is self-paced, you may move through the material as quickly or as slowly as you need to, with the goal of demonstrating proficiency in the five competencies covered in the final assessment. If you have no prior knowledge of this material, you can expect to spend 30-40 hours on the course content.

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 learner analyzes primary sources to understand events or processes in American history.*
- *The learner analyzes secondary sources to understand events and processes in American History.*
- *The learner describes how economic, political, and social factors affect communities*
- *The learner explains the effect of institutions on society.*
- *The learner explains the effect of the actions of individuals in U.S. History.*

Applied Probability and Statistics

Applied Probability and Statistics is designed to help students develop competence in the fundamental concepts of basic statistics including: introductory algebra and graphing; descriptive statistics; regression and correlation; and probability. Statistical data and probability are often used in everyday life, science, business, information technology, and educational settings to make informed decisions about the validity of studies and the effect of data on decisions. This course discusses what constitutes sound research design and how to appropriately model phenomena using statistical data. Additionally, the content covers simple probability calculations, based on events that occur in the business and IT industries. No prerequisites are required 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 principles and methods of probability-based mathematics to explain and solve problems.*
- *The graduate applies the operations, processes, and procedures of basic algebra to evaluate quantitative expressions, and to solve equations and inequalities.*
- *The graduate applies the operations, processes, and procedures of fractions, decimals, and percentages to evaluate quantitative expressions.*
- *The graduate evaluates categorical and quantitative data pertaining to a single variable using appropriate graphical displays and numerical measures.*
- *The graduate evaluates the relationship between two quantitative variables through correlation and regression.*
- *The graduate evaluates the relationship between two variables through interpretation of visual displays and numerical measures.*

Applied Algebra

Applied Algebra is designed to help you develop competence in working with functions, the algebra of functions, and using some applied properties of functions. You will start learning about how we can apply different kinds of functions to relevant, real-life examples. From there, the algebra of several families of functions will be explored, including linear, polynomial, exponential, and logistic functions. You will also learn about relevant, applicable mathematical properties of each family of functions, including rate of change, concavity, maximizing/minimizing, and asymptotes. These properties will be used to solve problems related to your major and make sense of everyday living problems. Students should complete Applied Probability and Statistics or its equivalent prior to engaging in Applied Algebra.

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 learner analyzes graphical depictions of real-world situations using functional properties.*
- *The learner applies exponential functions and their properties to real-world problems.*
- *The learner applies linear functions and their properties to real-world problems.*
- *The learner applies logistic functions and their properties to real-world problems.*

- *The learner applies polynomial functions and their properties to real-world problems.*
- *The learner interprets the real-world meaning of various functions based on notation, graphical representations, and data representations.*
- *The learner verifies the validity of a given model.*

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, everyday applications of physical science concepts to help students integrate conceptual knowledge with practical skills.

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 learner describes the nature and process of science.*
- *The learner 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 learner examines applications of key chemistry concepts including the structure of matter and the behavior and conservation of matter in chemical reactions.*
- *The learner examines applications of physics including fundamental concepts such as forces, motion, energy, and waves.*

Introduction to Systems Thinking and Applications

Introduction to Systems Thinking and Applications provides learners with the skills required to engage in a holistic systems-based approach to analyzing complex problems and solutions. This course introduces the foundational concepts and principles of systems thinking and provides opportunities to use a systems thinking approach to analyze and evaluate real-world case studies. The course will culminate with using systems thinking to develop a solution to an authentic complex problem. This course has no prerequisites, but general education math (C955 or C957) is preferred. Because the course is self-paced, learners may move through the material as quickly or as slowly as needed, with the goal of demonstrating proficiency in the five competencies covered in the final assessment. If learners have no prior knowledge of this material, they can expect to spend 30 to 40 hours on the course content.

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 learner analyzes complex problems and solutions using a systems thinking methodology.*
- *The learner applies the basic principles and foundational theory of systems thinking to a scenario.*
- *The learner designs a solution to a complex problem using systems thinking.*

Influential Communication through Visual Design and Storytelling

Influential Communication through Visual Design and Storytelling provides learners with foundational visual design and storytelling techniques to influence and create a lasting impression on audiences. Learners will first explore how human behavior is influenced by visuals and when to apply visual techniques to better communicate with audiences. Next, learners will learn techniques for creating compelling stories that create memorable images within the audience's mind. Ultimately, learners who master these skills will be well-positioned to apply their visual and storytelling techniques to not only better communicate their thoughts and ideas to an audience, but to also influence or motivate them.

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 learner adapts communications to the basic needs and motivations of their audience.*
- *The learner applies storytelling techniques to motivate, inform, or influence a target audience.*
- *The learner applies visual design techniques to motivate, inform, or influence a target audience.*

American Politics and the US Constitution

American Politics and the U.S. Constitution examines the evolution of representative government in the United States and the changing interpretations of the civil rights and civil liberties protected by the Constitution. This course will give candidates an understanding of the powers of the branches of the federal government, the continual tensions inherent in a federal system, the shifting relationship between state and federal governments, and the interactions between elected officials and the ever-changing electorate. This course will focus on such topics as the role of a free press in a democracy, the impact of changing demographics on American politics, and the debates over and expansion of civil rights. Upon completion of the course, candidates should be able to explain the basic functions of the federal government, describe the forces that shape American policy and politics, and be better prepared to participate in America's civic institutions. This course has no prerequisite.

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 describes the influence of competing political ideologies on the development of the United States government.*
- *The graduate examines the influence of political parties, citizens, and non-governmental organizations on elections and other political processes inside a participatory democracy.*
- *The graduate examines the influence of the media, public opinion, and political discourse on American democracy.*
- *The graduate examines the struggle to balance individual liberty, public order, and state's rights.*
- *The graduate explains how the structure and powers of the United States government interact to form public policy.*

Operating Systems

Linux Foundations

Linux Foundations prepares learners for the LPI Linux Essentials certification, and is an introduction to Linux as an operating system as well as an introduction to open-source concepts and the basics of the Linux command line. Learners will gain skills in identifying the fundamentals of open-source software and to develop resources for data access and security.

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 learner develops resources for data access and security.*
- *The learner identifies the fundamentals of open-source software.*

Network and Security

Network and Security - Foundations

Network and Security - Foundations introduces learners to the basic network systems and concepts related to networking technologies. Learners will gain skills in applying network security concepts for business continuity, data access, and confidentiality, and in identifying solutions for compliance with security guidance.

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 learner applies network security concepts for business continuity, data access, and confidentiality.*
- *The learner identifies basic network systems and concepts related to networking technologies.*
- *The learner identifies solutions for compliance with security guidance.*

Network and Security - Applications

Network and Security - Applications prepares learners for the CompTIA Security+ certification exam. The course introduces learners to skills in identifying threats, attacks, and vulnerabilities to organizational security. The learner will also gain skills in designing security solutions for enterprise infrastructures and architectures, as well as in implementing security solutions across hardware, applications, and network services. Learners will be able to execute operations and incident response with tools, policies, forensics, and mitigation techniques, and to analyze information security controls, governance, risk, and compliance.

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 learner analyzes information security controls, governance, risk, and compliance.*
- *The learner designs security solutions for enterprise infrastructures and architectures.*
- *The learner executes operations and incident response with tools, policies, forensics, and mitigation techniques.*
- *The learner identifies threats, attacks, and vulnerabilities to organizational security.*
- *The learner implements security solutions across hardware, applications, and network services.*

Networks

Networks

Networks introduces skills in configuring networking components and a network infrastructure. Learners will gain skills in optimizing network operations for availability, performance, and security, and in troubleshooting network issues. The course prepares learners for the CompTIA Network+ certification exam. Network and Security - Foundations is a prerequisite 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 learner configures a network infrastructure.*
- *The learner configures networking components.*
- *The learner implements network security techniques.*
- *The learner optimizes network operations for availability, performance, and security.*
- *The learner troubleshoots network issues.*

Networking

Network Analytics and Troubleshooting

Network Analytics and Troubleshooting teaches students to use network monitoring and analytics tools and practices that are common in the workplace in order to troubleshoot and fix complex computer networks. Students will follow a customer service model in identifying, classifying, investigating, and repairing network outages or problems. This course is designed as a hands-on experience where students will implement these techniques in a virtual space in order to produce a secure and functional deployed network.

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 learner identifies network problems with telemetry, software, and equipment.*
- *The learner performs network troubleshooting.*
- *The learner provides customer support in resolution of network issues.*

Software Defined Networking

Software Defined Networking (SDN) represents one of the fastest growing areas of network engineering. This course instructs learners on the SDN paradigm, which encompasses network automation, intent-based networking, and centralized network control. This course also teaches learners to view networking from a centralized and automated perspective rather than the traditional device-by-device model that is the legacy practice in many networks.

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 learner articulates use cases and opportunities for software defined networking (SDN).*
- *The learner determines how to maintain networks with centralized monitoring and troubleshooting processes.*
- *The learner determines how to maintain secure networks with software defined networking (SDN) principles.*
- *The learner identifies software defined networking (SDN) concepts and services used in development of network infrastructures.*

Python for IT Automation

Python for IT Automation covers the fundamentals of the Python language and its features to control program flow, inform decisions, and automate IT tasks and processes. The course emphasizes a systematic approach to solving problems and the

application of programming logic to administer secure, scalable, and resilient IT networks and systems.

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 learner applies Python principles and syntax to manage variables, data structures, and operators and to perform IT tasks.*
- *The learner creates Python scripts using control structures to automate system tasks.*
- *The learner integrates Python scripts, modules, packages, and libraries to automate networking tasks and processes.*

Full Stack Engineering

Version Control

Version control is critical to maintaining software and enabling scalability solutions. A best practice for any programming project that requires multiple files uses version control. Version control enables teams to have collaborative workflows and enhances the software development lifecycle. This course introduces students to the basics of publishing, retrieving, branching, and cloning. 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 learner implements version control processes and solutions that maintains source code.*

Artificial Intelligence

Introduction to AI Coding Assistants

Introduction to AI Coding Assistants explores the effective use of artificial intelligence as a collaborative tool in software and infrastructure work. The course examines techniques for communicating with AI systems, evaluating AI-generated solutions, and applying professional judgment to ensure accuracy, quality, and responsible decision-making in technical environments.

This course covers the following competencies:

- *• The learner applies AI-assisted prompt engineering techniques to generate code.*
- *• The learner explains the human-in-the-loop posture.*
- *• The learner reviews AI-generated code for quality and corrections.*
- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*

Introduction to AI on Hyperscalers

Introduction to AI on Hyperscalers examines foundational concepts in artificial intelligence, machine learning, generative AI, and responsible AI within cloud-based computing environments. The course explores how major cloud providers support AI solutions and compares common approaches to developing, deploying, and managing AI workloads at scale.

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 learner configures AI services on multiple hyperscalers.*
- *The learner describes foundational AI services offered by hyperscalers.*
- *The learner evaluates AI service landscape options for given use cases.*

Foundations of AI Infrastructure

Foundations of AI Infrastructure explores the core components and systems that support artificial intelligence workloads, including computing architectures, infrastructure connectivity, and approaches for deploying and managing large-scale environments. The course provides foundational knowledge of how AI infrastructure is designed, operated, and optimized to support organizational objectives and emerging AI applications.

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 learner describes core requirements and design considerations for AI infrastructure.*

- *The learner describes foundational concepts, architectures, and software ecosystems of AI.*
- *The learner explains principles of AI infrastructure management.*

Applied Cloud Architecture

Applied Cloud Architecture examines the principles and practices used to design reliable, scalable, and resilient cloud solutions. The course explores architectural approaches for supporting availability, performance, fault tolerance, and growth while developing the decision-making skills needed to evaluate and design cloud-based systems that align with organizational requirements.

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 learner applies a framework to review cloud architecture designs.*
- *The learner designs cloud architecture to meet business and technical requirements.*
- *The learner evaluates cloud architecture proposals for alignment to requirements.*

Sustainable AI

Sustainable AI explores the environmental considerations associated with designing and operating artificial intelligence systems. The course examines methods for evaluating resource consumption, measuring environmental impact, and making infrastructure decisions that support efficient and sustainable AI solutions across cloud computing environments.

This course covers the following competencies:

- *• The learner communicates decisions regarding AI infrastructure and environmental impact to a non-technical audience.*
- *• The learner monitors environmental impact of AI infrastructure by implementing tooling and interpreting metrics.*
- *• The learner optimizes for the environmental impact of AI infrastructure designs.*
- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*

Containerization

Containerization introduces the principles and practices of creating, deploying, and managing containerized applications across modern computing environments. The course examines container design, runtime operations, networking concepts, and approaches for storing and distributing application components, providing foundational knowledge that supports scalable software delivery and orchestration practices.

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 learner builds container images that address security concerns and use appropriate container design.*
- *The learner implements use of container registries as part of a complete image lifecycle workflow.*
- *The learner manages containers in a multi-container environment.*

Continuous Integration and Continuous Deployment

Continuous Integration and Continuous Deployment explores the principles and practices used to automate the integration, testing, and delivery of technology solutions. The course examines pipeline design, workflow automation, and deployment strategies while developing an understanding of how continuous delivery practices support reliability, quality, and efficiency across a variety of technical domains.

This course covers the following competencies:

- *The learner designs a basic, functioning CI/CD pipeline using industry-standard tooling.*
- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The learner applies CI/CD practices to design pipelines.*
- *The learner applies security and reliability practices to CI/CD pipeline configurations.*

AI Workloads and Orchestration

AI Workloads and Orchestration explores the principles and practices used to deploy, manage, and scale artificial intelligence workloads in modern computing environments. The course examines orchestration concepts, deployment patterns, resource management, application delivery, and workflow coordination that support the reliable operation of AI systems from development through production.

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 learner configures infrastructure for containerized applications.*
- *The learner configures resource allocation for AI workloads.*

ML DevSecOps

ML DevSecOps explores the principles and practices used to secure machine learning systems throughout the development and operational lifecycle. The course examines risk management, system security, incident response, and secure development practices for machine learning environments, providing a foundation for protecting AI solutions while supporting reliability, trust, and organizational objectives.

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 learner assesses an ML system for security using established frameworks.*
- *The learner communicates security findings and risk assessments to organizational stakeholders.*
- *The learner mitigates security risks in ML systems.*
- *The learner responds to active security events in ML systems.*

Content Delivery Networks and Global Infrastructure

Content Delivery and Global Infrastructure explores the principles and practices used to design and operate technology solutions that serve users across geographically distributed environments. The course examines global infrastructure patterns, traffic management strategies, content delivery approaches, and methods for supporting performance, scalability, and reliability for applications and artificial intelligence workloads.

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 learner analyzes latency and performance implications of deployment geography for AI inference workloads.*
- *The learner configures CDN distributions for realistic content and workload types.*
- *The learner designs multi-region deployment architectures and routing policies.*

Cloud Cost Management and FinOps

Cloud Cost Management and FinOps explores the principles and practices used to manage, measure, and optimize cloud resource investments. The course examines cost analysis, financial accountability, resource optimization, sustainability considerations, and collaboration across organizational stakeholders to support informed decision-making and efficient cloud operations.

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 learner communicates cloud cost optimization recommendations to organizational stakeholders.*
- *The learner evaluates features and financial structures of cloud services.*
- *The learner explains cloud service decisions using relevant financial frameworks.*

High-Performance Computing

High-Performance Computing explores the specialized infrastructure and system design principles required to support

large-scale artificial intelligence workloads. The course examines high-performance networking, storage architectures, resource management strategies, and distributed computing environments, developing the ability to evaluate whether complex computing systems can deliver the performance, scalability, and efficiency demanded by advanced AI applications.

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 learner evaluates HPC infrastructure configurations for AI workload scenarios.*
- *The learner justifies interconnect technology selection for specific AI workload requirements.*
- *The learner justifies storage architectures for AI workloads.*

AI Infrastructure and Operations Capstone

AI Infrastructure and Operations Capstone integrates knowledge and skills from across the program through the analysis and management of artificial intelligence infrastructure in a dynamic organizational environment. The course examines technical, operational, and professional considerations involved in evaluating existing systems, responding to evolving requirements, and making informed decisions that support reliable and effective AI operations.

This course covers the following competencies:

- *The learner communicates with cross-functional stakeholders to build and maintain productive working relationships.*
- *The learner implements changes to cloud-based AI systems to meet multiple concurrent requirements.*
- *The learner justifies engineering decisions in scenarios with conflicting design requirements and goals.*
- *The learner presents technical work to a technical and non-technical audience.*

Cloud and Virtualization

Virtualization and IaaS

Virtualization and Infrastructure as a Service (IaaS) explores the foundational principles and benefits of virtualization technologies and their application in IaaS environments. This course examines the role of virtualization in modern IT infrastructure, emphasizing its practical implementation and contribution to scalable, efficient, and cost-effective solutions.

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 learner configures a virtual environment with various tools and technologies.*
- *The learner evaluates virtualization technologies for various types of IT deployments.*
- *The learner proposes an IaaS solution to solve a business problem.*

Cloud Deployment and Operations

Cloud Deployment and Operations provides students with technical skills in the deployment, management, and operations of cloud services. This course allows students to examine stability and scalability, backup and recovery processes, and deployment best practices. Provisioning of cloud resources, monitoring of cloud resources, and managing connectivity are also examined. The following courses are prerequisites: Cloud Applications and AWS Cloud Architecture.

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 learner automates cloud provisioning processes and maintenance.*
- *The learner configures network connectivity as part of AWS network infrastructure design, troubleshooting, and remediation.*
- *The learner determines the optimal baseline for cost and performance using AWS Services.*
- *The learner implements AWS data and infrastructure protection services for information security and compliance.*
- *The learner implements AWS system scalability, elasticity, and backup systems in support of business continuity operations.*
- *The learner remediates issues based on the output of implemented AWS systems monitoring and logging services.*

Information Technology Management

Cloud Foundations

Cloud Foundations introduces learners to real-world issues and practical solutions to cloud computing. This course covers the

business value of cloud computing, examining cloud types, the steps to successful cloud adoption, and the effect cloud adoption has on IT service management, as well as the risks and consequences of implementing cloud solutions. This course prepares learners for the AWS Certified Practitioner certification exam. 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 learner articulates the value proposition of cloud solutions in business scenarios.*
- *The learner defines cloud security and compliance.*
- *The learner determines the best-fit solution for a project based on the cost and support structures.*
- *The learner identifies cloud technology solutions in IaaS, PaaS, and SaaS models.*

Web and Cloud Security

Cloud AI Systems and Security

Cloud AI Systems and Security examines how artificial intelligence systems are built, deployed, governed, and secured in cloud environments. The course explores machine learning lifecycle concepts, generative AI architectures, foundation model applications, prompt engineering, and responsible AI practices within a cloud environment. The course prepares students to assess AI-enabled cloud deployments and supports readiness for cloud-based AI security

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 learner assesses the security and governance posture of a cloud-hosted AI deployment.*
- *The learner describes the architecture of generative AI systems in cloud environments.*
- *The learner evaluates an AI system against responsible AI principles.*
- *The learner explains the cloud managed services for each phase of the ML development lifecycle.*

Cloud and Network Security Models

Cloud and Network Security Models guides learners through the intricacies of cloud and hybrid network security, covering fundamental principles, emerging threats, cutting-edge tools, advanced defense techniques and best practices for fortifying network security and mitigating risks.

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 learner describes architecture and security frameworks in cloud and hybrid environments.*
- *The learner describes key concepts and principles of cloud and hybrid network security.*
- *The learner implements architectures for securing frameworks used in hybrid networks.*

Cloud Technologies

Hybrid Cloud Infrastructure and Orchestration

Hybrid Cloud Infrastructure and Orchestration delves into the design, implementation, and management of hybrid cloud environments. It covers the integration of on-premises infrastructure, private cloud, public cloud, and edge computing to create a hybrid cloud ecosystem.

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 learner configures networks and security measures for a hybrid cloud environment.*
- *The learner describes considerations of implementing a hybrid cloud environment that could include integrations of on-prem infrastructure, private cloud, public cloud, and edge computing.*
- *The learner manages the workflows of a hybrid cloud environment using orchestration tools.*

Accessibility and Accommodations

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