Scripting and Programming Foundations Course Syllabus

WESTERN GOVERNORS UNIVERSITY

Scripting and Programming Foundations

Hello, and welcome!

Computers play a major role in our world and daily lives—from smartphones to laptops to gaming systems and more. And they range from simple to complex in their operations and abilities. But there is a common connection among them all—scripting and programming. And whether you are learning to build a house, paint a picture, or work in information technology—it all starts with a solid foundation. In this course, you will examine the fundamental principles of scripting and programming. And you will gain the necessary skills to advance your career to the next level.

We invite you to take a minute to learn about the course by reviewing the information that follows. This way, you will be better able to understand the expectations of the course as a whole. Then you can determine how to manage your time and efforts as you navigate through it.

You are in the right place. You belong here. You can do this!

Course Description and Competencies

WHAT TO EXPECT

In this course, you will examine the fundamental principles of programming. You will look at variables, data types, flow control, and design concepts. You will survey various languages used in scripting. And you will also gain an understanding of the logic and outcome of simple algorithms.

Throughout this course, you will find a variety of interactive elements. These include an interactive textbook, participation activities, and labs. Engaging with these activities reinforces new learning. It also complements the knowledge you bring to this area of study.

This course covers the following competencies:

1. The learner identifies scripts for computer program requirements.
2. The learner uses fundamental programming elements as part of common computer programming tasks.
3. The learner explains the logic and outcome of simple algorithms.

Assessment

The assessment provides an opportunity to demonstrate your mastery of the competencies in this course. You may attempt the assessment two times before additional support is necessary. If you require further attempts, please contact your Course Instructor or Student Experience Specialist.

♦ **1** final exam ♦ **3** competency units

Course Outline

Module	Upon completion of this module, you will be able to:
Introduction	A. Define what a computer program is and what they do B. Describe the purpose of a flowchart C. Explain how a computer program represents data D. Describe the purpose of pseudocode
Variables & Assignments	A. Explain the purpose of variables, assignment statements, and expressions B. Follow identifier naming conventions C. Describe how to choose a variable's type D. Describe functions and type conversions
Branches	A. Define a branch in a flowchart B. Explain a decision in a flowchart C. Describe *if-else* statements D. Explain nested branches
Loops	A. Describe a loop and how one is implemented in a program B. Explain an infinite loop and a nested loop C. Compare *while* loops, *for* loops, and *do* loops D. Build complex Cascading Style Sheets (CSS)
Arrays	A. Define an array B. Describe an array index C. Define an array variable D. Explain how to iterate through an array
User-Defined Functions	A. Define the purpose of a function B. Describe the role of a parameter in a function C. Explain modular development D. Explain incremental development
Algorithms	A. Define what an algorithm is B. Explain how to measure an algorithm's efficiency C. Describe practical applications of algorithms D. Compare linear searches and binary searches
The Design Process	A. Describe the system development life cycle (SDLC)

	B. Explain the difference between Agile and Waterfall C. Define the purpose of an object in programming D. Define the Universal Modeling Language (UML)
Software Topics	A. Explain the difference between a compiled language and an interpreted language B. Compare statically typed and dynamically typed languages C. Describe object-oriented languages and markup languages D. Explain how libraries improve productivity in programming
Troubleshooting	A. Explain the troubleshooting process B. Define the role of a hypothesis in troubleshooting C. Explain an asymmetric test D. Describe a hierarchical hypothesis
Debugging	A. Describe the purpose of debugging in programming B. Explain debugging output statements C. Describe hierarchical debugging

Technology Requirements

We want you to have the tools to succeed! Since this course includes at least one proctored test, please be sure to have a working microphone, speakers, and an external webcam. Unfortunately, an internal webcam (built into many laptops) is not acceptable. (Note: The external webcam is required only for exams that have proctors. You do not need one for practice tests and other non-proctored assessments.)

If you haven't already, be sure to download the *Meazure Learning Guardian* browser, which you will need for the proctoring system.

For other details about the technology you'll need, review the Computer System and Technology Requirements. If you have questions about your setup, contact support@academy.wgu.edu.

You will need Adobe Acrobat Reader DC. If you haven't already, download this free software. You may encounter an interactive form that contains fields that you can select or fill in. Review how to fill in a PDF form.

Key Contacts

Resource Hub	Check out the Course Lobby to take advantage of course resources, including videos and tips from our educators. There, you can ask and answer questions, provide feedback on your progress, and connect with fellow students. You will find this platform in the Student Resources section of the course. Log on and do some exploring!
Technical Support	If you encounter technical issues, be sure to contact the Help Desk. Just submit a Support Request for assistance.
Program Support	Do you have questions about your account? Student Support has answers. They can help with billing, switching courses, and other requests. You can contact them at (888) 320-0540 or support@academy.wgu.edu.

Accommodations

WGU provides compliant and accessible learning experiences. If you require accommodation, please contact us at the start of the course. You can email support@academy.wgu.edu or call (888) 320-0540. We are committed to ensuring that all students with disabilities have equal access to WGU's services and materials. We strive to use best practices for accessibility. Our goal is to conform to existing U.S. laws. These include the Americans with Disabilities Act and Section 504 and Section 508 of the Rehabilitation Act. Our learning management system (LMS) platform is Open edX. Open edX's commitment to accessible content is published on their Website Accessibility Policy.