



Course Description

CIS1531 | Introduction to Secure Scripting | 4.00 credits

This course provides students with the knowledge and skills to: create secure scripts and programs using system shells and programming languages; implement and debug algorithms to solve problems; automate and perform administrative tasks; manage data handling, and backup and storage.

Course Competencies:

Competency 1: The student will demonstrate an understanding of scripting fundamentals by:

1. Describing everyday scripting and programming languages and their operating system platforms, development environments, and differences
2. Describing scripting shells for Windows (PowerShell) and Linux (BASH, etc.) and their scripting tools
3. Installing and configuring Windows with its PowerShell components
4. Installing and configuring Linux with its standard shell scripting environment, including BASH
5. Deconstructing scripts to analyze their operations
6. Executing scripts
7. Writing simple shell scripts to perform basic operating system tasks

Competency 2: The student will demonstrate an understanding of the script development process by:

1. Describing common problem-solving strategies
2. Writing pseudocode before writing a script
3. Applying the techniques of functional decomposition
4. Incorporating adequate and meaningful comments into a scripting project
5. Participating in a development team to solve a problem
6. Testing and debugging the logic and commands in a script

Competency 3: The student will demonstrate an understanding of basic script constructs by:

1. Describing the basic data types, variables, text processing, control structures, regular expressions, input/output, textual analysis, strings, and arrays
2. Describing Boolean logic and operations, including AND, OR, XOR, and NOT
3. Describing the use of logic, operators, loops, functions, modules, objects and classes
4. Describing the use of scripts in accessing databases, network programming, and web applications

Competency 4: The student will demonstrate an understanding of scripting and programming development environments by:

1. Describing the significant components of scripting development environments, their editing tools and components
2. Describing the creation of scripts in Windows and Linux shell environments
3. Examining, creating, and debugging scripting projects using Windows and Linux development environments
4. Examining, creating, and debugging scripting projects using the Python development environment
5. Writing a script to automate standard system administration tasks

Competency 5: The student will demonstrate proficiency in scripting by:

1. Writing a script with basic data structures and algorithms, etc
2. Debugging scripts containing minor and significant errors
3. Writing a script using simple cryptographic algorithms
4. Implementing algorithms to compute elementary statistics
5. Writing a script with sequential and parallel execution

Competency 6: The student will demonstrate an understanding of Python programming by:

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1. Describing Python lexical elements, data, and execution models
2. Describing Python expressions and statements
3. Creating scripts with the casting of data types, data handling, and storage
4. Using pattern matching with regular expressions
5. Using classes

Competency 7: The student will demonstrate an understanding of secure scripting by:

1. Explaining common software security issues
2. Writing a secure script to perform permissions configuration
3. Using bounds checking, input validation, type checking, and parameter validation
4. Writing a script to encrypt and decrypt messages and files

Competency 8: The student will demonstrate an understanding of workplace skills and professionalism by:

1. Describing the roles of the security professional in a business enterprise
2. Describing methods of logging incidents and reporting problem resolution
3. Presenting and following oral and written instructions
4. Demonstrating self-motivation and responsibility to complete an assigned task
5. Choosing appropriate actions in situations requiring effective time management
6. Applying principles and techniques for being a productive, contributing team member
7. Identifying and discussing intellectual property rights and licensing issues
8. Identifying and discussing issues contained within professional codes of conduct
9. Using appropriate communication skills, courtesy, manners, and dress in the workplace
10. Documenting problems and solutions in service reports and maintaining support records
11. Explaining the methods and best practices of interviewing end users to determine the symptoms and probable causes of system problems

Competency 9: The student will demonstrate an understanding of workplace skills and professionalism by The

1. Describing the roles of the network security professional in a business enterprise
2. Describing methods of logging incidents and reporting problem resolution
3. Presenting and following oral and written instructions
4. Demonstrating self-motivation and responsibility to complete an assigned task
5. Choosing appropriate actions in situations requiring effective time management
6. Applying principles and techniques for being a productive, contributing member of a team
7. Identifying and discussing intellectual property rights and licensing issues
8. Identifying and discussing issues contained within professional codes of conduct
9. Using appropriate communication skills, courtesy, manners, and dress in the workplace
10. Documenting problems and solutions in service reports and maintaining support records
11. Explaining the methods and best practices of interviewing end users to determine the symptoms and probable causes of system problems

Learning Outcomes:

- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Use computer and emerging technologies effectively