

CS: Network Security

Course Abbreviation	Course Level Learning Competencies	Program Student Learning Outcomes				
		 	Use pattern recognition and logic to predict, analyze and solve problems	Work autonomously and/or in teams to effectively solve information technology concerns.	Demonstrate extensive knowledge of cyber security threats and concepts of information security.	Design, configure, and implement secure systems with best practices of networking and security
CIS113	Create databases to organize and analyze business or personal records		LR			
	Design the structure and properties of tables, queries, reports, and forms		LR			
	Import/export data into/from a Database		LR			
	Create relationships between tables, while enforcing referential integrity, and setting join types		LR			
	Create Queries in Access and in SQL to sort, omit duplicates and join tables		LR			
	Plan, design, and create custom forms and sub forms containing calculated controls		LR	I		
	Use the database splitter, encrypt and decrypt databases		I	I	I	I
CIS115	Explain and identify top threats to a computer network such as DDOS, password crackers, Spyware and Malware, and how to prevent them.		I	I	I	I
	Explain how to avoid online fraud and identity theft			I	I	
	Compare and contrast perimeter and layered approaches to network security using best practices			I	I	I
	Explain and demonstrate how to guard against malware, including viruses, worms and trojan horses and how they propagate, and understand how virus scanners operate.		I		I	I
	Describe related legal aspects to computer crimes, including cyber stalking				I	
	Explain security protocols and principles, such as CIA triad				I	I
	Describe key terms such as assurance, authenticity, cracker and firewall				I	
	Explain the basics of modern cryptographic concepts and methods; encryption, digital signatures and certificates		I		I	I
	Describe the basics of privacy, including the function of VPNs, browser settings and anonymity				I	
Describe how to implement usable security such as passwords, authentication and physical security		I	I	I	I	
Describe how to protect yourself against social engineering threats				I		
CIS117	Use the command line to navigate, search, and manipulate the file system		I	I		
	Use the command line to gather information about the network and running processes		I	I		
	Open, edit, and save files using VI and/or Emacs		I	I		
	Combine tools and features such as filters, pipes, appends and redirections to solve problems		I	I		I
	Read, write and debug bash scripts which include variables, control structures and system commands		I	I		I
Utilize resources, online and off, to find additional information about the commands and system		I	I		I	
CIS140	Write algorithms to solve specific problems		I	I		
	Explain the concept of abstraction in computer science and identify an example		I	I		
	Write programs to solve specific problems using variables, control structures, and arrays		I	I		
	Convert to and from various number systems, including binary and hexadecimal. Identify examples of how these representations are used in computer systems and data representations		I	I		
	Summarize the history of computation and the evolution of computer hardware and software		I	I		
	Discuss the impact of computer science on our society and how it impacts our lives and culture		I	I		I
	Explain introductory concepts in a variety of areas in computer science including (but not limited to) Computer Architecture, Computer Security, and Data/Information Systems		I	I	I	I
CIS153	Be able to read, write and test Python scripts at a shell prompt		R	R		
	Use Python types and expressions		R	R		
	Use Python statements (such as conditionals)		R	R		
	Write and call Python functions		R	R		
	Write simple Python classes and access methods		R	R		
	Use and understand a package manager			R		

	Use Python 2 and Python 3 for some simple scripting		R		
	Understand what a unit test is, how to write them and why they are useful	R	R		
	Use a version control system (such as github)	R	R		
CIS215	Demonstrate knowledge of a core set of security tools	R	R	R	R
	Use existing monitoring tools for intrusion detection	R	R	R	R
	Demonstrate proper use of cryptographic systems to secure information in storage and transit			R	R
	Demonstrate knowledge of tools analyzing intrusions	R	R	R	R
	Demonstrate knowledge of system hardening processes and policies	R	R	R	R
	Produce appropriate policies for a variety of security issues		R	R	R
	Demonstrate knowledge of data access and control systems	R	R	R	R
	Perform the basic steps of a security audit and vulnerability analysis	R	R	R	R
	Demonstrate the ability to use appropriate tools to recover from an intrusion		R	R	R
	Demonstrate the use of basic tools for cleaning systems		R	R	R
	Plan disaster recovery policies and procedures	R	R	R	R
CIS245	Utilize virtualization and container technology such as Docker	R	R		
	Knowledge of virtualization, and virtualization best practices	R	R		R
	Experience with storage and backup systems	R	R	R	R
	Knowledge of app stacks, such as LAMP	R	R		
	Create and maintain users and passwords	R	R	R	R
	Using different Linux operating systems including booting into different run levels, starting and stopping processes and controlling services	R	R		
	Deploy, configure and maintain a system	R	R	R	R
	Do software installations, updates and maintenance	R	R	R	
	Manage basic security including firewalls and system hardening	R	R	R	R
	Read, utilize and produce technical documentation	R	R		R
CTN110	State the principles of how computers work including typical computer architecture using standard terminology				
	Write algorithms to solve specific problems.	I	I		
	Demonstrate basic Operating system usage for Windows and Linux (command based) including basic file and folder management	I	I		I
	Demonstrate safe computer usage including basic PC security and information assurance	I	I	I	I
	Describe what happens when you email, use a web browser or IM		I		
	Describe the differences among network types and the typical network equipment	I	I		I
	Explain the basic use of office application software and use it for basic problem solving in an Information Technology context.		I		
	Demonstrate the implementation of an algorithm using a programming system (basic)	I	I		
	Demonstrate the basic process of Help Desk calls.		I		
	Describe the importance of ethics in Information Technology using specific examples		I		
	Demonstrate an understanding of web terminology including protocols, ports and IP addresses		I	I	I
	Demonstrate a proficiency with virtualization	I	I		
	Choose a viable research topic and clearly define research goals.	I			
	Access needed information effectively and efficiently from a variety of print and electronic sources.	I			
	Evaluate information critically, choosing relevant, timely and authoritative sources.	I			
CTN201	Demonstrate the differences among Cable types		I		I
	Construct and test cables using standard connectors and techniques		I		I
	Plan a network layout	I	I		I
	Use cable management hardware		I		I
	Use diagnostic procedures to locate network problems	I	I		I
	Understand layered protocols	I	I	I	I
	Detect and interpret network packets	I	I	I	I
	Describe the use of hubs and switches		I		I
	Troubleshoot routing issues	I	I		I
	Use a firewall		I	I	I
	Diagnose DNS problems	I	I		I
	Monitor and troubleshoot local networks	I	I	I	I
	Create and manage a local network	I	I	I	I
CTN222	Install, configure and manage Microsoft Servers		R		R
	Analyze and explain the use of Active Directory	R	R		R
	Compare and contrast the different types of user and group management		R	R	R
	Evaluate and classify various network security and backup strategies	R	R	R	R
	Detail Security strategies and tactics	R	R	R	R
	Install, configure and manage SharePoint (collaboration server)		R		R

	Install, configure and manage Exchange (eMail server)		R		R
	Manage and troubleshoot a Router		E	E	E
	Configure a router including enhanced editing and security		E	E	E
	Manage and troubleshoot a switch	E	E	E	E
	Understand and be able to implement dual stack IP addressing	E	E		E
	Configure HyperTerminal for router and switch access	E	E		E
CTN 223	Use Cisco for security device manager and discovery protocol	E	E		E
	Design and implement a VLAN	E	E	R	E
	Design and implement an enterprise WAN	E	E	R	E
	Differentiate between Exterior and Interior Gateway Protocols	E	E		E
	Configure and maintain a VPN	E	E	R	E
	Configure and troubleshoot a hybrid Network	E	E	R	E

