Computer Science Cybersecurity		Course to Program Map						
Program Outcomes: Upon completion of the program, graduates will be able to…	Institutional Skills	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Courses								
CSCI 101 Introduction to Management Information Systems	15	I	I	I	IR	IR	I	
CSCI 102 Introduction to Programming	3	IRMA	IRMA	IRMA			IRMA	IRMA
CSCI 107 Advanced Programming	3	IRMA	IRMA	IRMA			IRMA	IRMA
CSCI 110 Intro to Computer Concepts and Applications	15	IA	I	I	I		IRA	
CSCI 125 CompTIA A+ Essentials	3	IRMA	IR	IR				IRMA
CSCI 126 CompTIA A+ Practical Applications	3	IRMA	IR	IR				IRMA
CSCI 130 Introduction to Cybersecurity	1235	IRMA	IR	IR	IRMA	IRMA	IR	IR
CSCI 140 Overview of Computer Science	12345	IRMA	IR	IR	IRMA	IRMA	IR	IR
CSCI 150 Network Essentials (Network+)	3	IR	IRMA	IRMA			IRMA	IRMA
CSCI 190 Computer Ethics	12345				IRMA	IR		
CSCI 230 Security Essentials (Security+)	1235	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
CSCI 262 Project Management	12345	IR	I	IR	IR	IRMA	IR	IRMA

Mapping	
I	Introduced
R	Reinforced
M	Mastered
A	Assessed/Artifact

Essential Skills	
1	written communication
2	oral communication
3	critical thinking
4	cultural diversity
5	social responsibility

Employability Skills	
C	communication
P	problem solving
W	work ethic

CSCI 101 Introduction to Management Information Systems	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
describe the major components of an information system.	I	I	I			I	
describe how information systems and technologies are used.	I	I	I			I	
describe the components of a computer system.	I	I	I			I	
describe the process of writing a computer program.	I	I	I			I	
describe how data is stored.	I	I	I			I	
describe networks and how the Internet works.	I	I	I			I	
describe how to secure a computer from malware.	I	I	I	IRMA	IR	I	
discuss ethical dilemmas that arise in modern computing.	I	I	I	IRMA	IR	I	

CSCI 102 Introduction to Programming	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
identify and describe general computer and programming topics such as operating systems, networking, databases, algorithms, control structures, data types, data storage, files and arrays.	IR	IR	IR			IR	IR
demonstrate structured programming principles, such as top-down modular design and proper program documentation and style.	IRMA	IRMA	IRMA			IRMA	IRMA
demonstrate the use of certain basic tools and algorithms, such as data validation, defensive programming, calculating sums and averages, and searching and sorting lists.	IRMA	IRMA	IRMA			IRMA	IRMA
describe and articulate other programming paradigms, such as object-oriented and event-driven programming.	IR	IR	IR			IR	IR

CSCI 107 Advanced Programming	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
demonstrate an understanding of file structure, creation and management	IRMA	IRMA	IRMA			IRMA	IRMA
demonstrate an understanding of logic methods of data file use.	IR	IR	IR			IR	IR
demonstrate the ability to use utility programs	IR	IR	IR			IR	IR
demonstrate an understanding of various file types within a specific language	IR	IR	IR			IR	IR

CSCI 110 Intro to Computer Concepts and Applications	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
identify the specifications and configurations of computer hardware.	I						
identify the role of an operating system.	I						
use the Internet to find information and determine its credibility.	I	I					
use word processing software to create, edit, and produce professional documents.	IA	I	I			IRA	
create spreadsheets and charts for problem-solving.	IA	I	I			IRA	
utilize a database.	IA	I	I			I	
use presentation software to create, edit, and produce professional presentations.	IA	I	I			IRA	
identify the ethical and social standards of conduct regarding the use of information and technology.	I			I			
identify security threats and solutions.	I			I			

CSCI 125 CompTIA A+ Essentials	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
illustrate the installation, configuration and troubleshooting of current operating systems.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
identify basic computer components.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
identify, install and troubleshoot computer processors.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
identify, install and troubleshoot memory.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
identify, install and troubleshoot peripherals.	**IR**	**IR**	**IR**			**IR**	**IR**
identify, install and troubleshoot video components.	**IR**	**IR**	**IR**			**IR**	**IR**
identify, install and troubleshoot storage media.	**IR**	**IR**	**IR**			**IR**	**IR**
identify, install and troubleshoot input and output ports and cables.	**IR**	**IR**	**IR**			**IR**	**IR**
identify, install and troubleshoot printers.	**IR**	**IR**	**IR**			**IR**	**IR**
identify, install, troubleshoot and configure basic networks and components.	**IR**	**IR**	**IR**			**IR**	**IR**

CSCI 126 CompTIA A+ Practical Applications	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
illustrate the installation, configuration and troubleshooting of current operating systems.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
compare and contrast the features and requirements of various Microsoft Operating Systems.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
demonstrate use of networking, OS and recovery console command line tools.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
configure and troubleshoot a network client/desktop device.	**IRMA**	**IR**	**IR**			**IRMA**	**IRMA**
perform preventative maintenance procedures.	**IR**	**IR**	**IR**			**IR**	**IR**
demonstrate use of basic network, OS and data security.	**IR**	**IR**	**IR**			**IR**	**IR**
identify and integrate mobile devices.	**IR**	**IR**	**IR**			**IR**	**IR**
demonstrate common troubleshooting methods.	**IR**	**IR**	**IR**			**IR**	**IR**

CSCI 130 Introduction to Cybersecurity	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
describe the importance of cybersecurity.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss access control models.	IRMA	IR	IR	IRMA	IRMA	IR	IR
explain cryptographic concepts.	IRMA	IR	IR	IRMA	IRMA	IR	IR
design the protections to ensure physical security.	IRMA	IR	IR	IRMA	IRMA	IR	IR
explain the role of authentication technologies.	IRMA	IR	IR	IRMA	IRMA	IR	IR
distinguish physical intrusion, process security, memory and file system security issues.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss application program security.	IRMA	IR	IR	IRMA	IRMA	IR	IR
examine the threat of insider attacks, viruses, malware and privacy invasive software.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss network security concepts.	IRMA	IR	IR	IRMA	IRMA	IR	IR
define denial-of-service attacks and discuss their potential impact.	IRMA	IR	IR	IRMA	IRMA	IR	IR
describe the application layer and DNS.	IRMA	IR	IR	IRMA	IRMA	IR	IR
explain the role of firewalls and tunneling.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss intrusion detection and attacks on clients and servers.	IRMA	IR	IR	IRMA	IRMA	IR	IR
explain how digital signatures work.	IRMA	IR	IR	IRMA	IRMA	IR	IR

discuss the role of security standards and evaluation.	IRMA	IR	IR	IRMA	IRMA	IR	IR
design a software vulnerability assessment.	IRMA	IR	IR	IRMA	IRMA	IR	IR

CSCI 140 Overview of Computer Science	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
define algorithms and give historical examples.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss programming and how programs are constructed.	IRMA	IR	IR	IRMA	IRMA	IR	IR
define data storage and describe how data is stored.	IRMA	IR	IR	IRMA	IRMA	IR	IR
evaluate Boolean operations used to construct logic gates.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss data compression and some of the techniques.	IRMA	IR	IR	IRMA	IRMA	IR	IR
describe the role of the CPU, bus and motherboard.	IRMA	IR	IR	IRMA	IRMA	IR	IR
discuss machine instructions and machine language.	IRMA	IR	IR	IRMA	IRMA	IR	IR
explain the machine cycle: fetch, decode, execute.	IRMA	IR	IR	IRMA	IRMA	IR	IR
state the key functions of the operating system.	IRMA	IR	IR	IRMA	IRMA	IR	IR
describe how the operating system handles competing demands for resources.	IRMA	IR	IR	IRMA	IRMA	IR	IR
explain fundamental network concepts.	IRMA	IR	IR	IRMA	IRMA	IR	IR

describe the stages of the software life cycle.	**IRMA**	**IR**	**IR**	**IRMA**	**IRMA**	**IR**	**IR**
discuss various software engineering methodologies.	**IRMA**	**IR**	**IR**	**IRMA**	**IRMA**	**IR**	**IR**
define a database and discuss the fundamental concepts.	**IRMA**	**IR**	**IR**	**IRMA**	**IRMA**	**IR**	**IR**
describe an artificial neural network.	**IRMA**	**IR**	**IR**	**IRMA**	**IRMA**	**IR**	**IR**
discuss the role of artificial intelligence.	**IRMA**	**IR**	**IR**	**IRMA**	**IRMA**	**IR**	**IR**

CSCI 150 Network Essentials (Network+)	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
discuss computer network fundamentals including various network topologies	IR	IRMA	IRMA			IRMA	IRMA
discuss the ISO/OSI reference model and the function of the different network layers.	IR	IRMA	IRMA			IRMA	IRMA
describe the components of a computer network including media and network devices.	IR	IRMA	IRMA			IRMA	IRMA
discuss the role of the Ethernet.	IR	IRMA	IRMA			IRMA	IRMA
discuss IP address and subnets.	IR	IRMA	IRMA			IRMA	IRMA
discuss the traffic routing process.	IR	IRMA	IRMA			IRMA	IRMA
discuss WANs and LANs.	IR	IRMA	IRMA			IRMA	IRMA
discuss the optimization of network performance.	IR	IRMA	IRMA			IRMA	IRMA
discuss network management.	IR	IRMA	IRMA			IRMA	IRMA
discuss network security.	IR	IRMA	IRMA			IRMA	IRMA
discuss troubleshooting network issues.	IR	IRMA	IRMA			IRMA	IRMA
discuss preparation for industry certification testing.	IR	IRMA	IRMA			IRMA	IRMA

CSCI 190 Computer Ethics	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
discuss the pace of change in computer technology.				IRMA	IR		
define ethics and explain why it is relevant to computer technology.				IRMA	IR		
discuss privacy risks and threats to the rights of individuals.				IRMA	IR		
discuss free speech issues and global censorship controls.				IRMA	IR		
define intellectual property and discuss challenges to copyright and ownership.				IRMA	IR		
give examples of the impact of hacking and other computer crimes.				IRMA	IR		
describe the impact of computer technology on employment and work conditions.				IRMA	IR		
discuss the "digital divide" and the impact of computer technology on society.				IRMA	IR		
discuss concerns about the accuracy of information available on the internet.				IRMA	IR		
examine the impact of failures and errors in computer systems.				IRMA	IR		

discuss approaches to increase the reliability and safety of computer systems.				**IRMA**	**IR**		
discuss ethical guidelines for computer professionals.				**IRMA**	**IR**		

CSCI 230 Security Essentials (Security+)	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
describe how to calculate risk and five approaches to managing risk.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
describe ways to monitor and diagnose networks.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
discuss the impact of devices and infrastructure on security.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
describe the roles of access control, authentication, and authorization.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
describe common vulnerabilities of wireless network security.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
list cloud service models, delivery models and types of hypervisors.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
discuss the weaknesses and vulnerabilities of the various applications the run on a network.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
discuss cryptography using either symmetric or asymmetric algorithms.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
discuss various types of attacks from malware, vulnerabilities, and threats.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
describe the process of social engineering and other foes.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
discuss the role of education and legislation on security administration.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA
discuss backup planning, disaster recovery and incident response.	IRMA	IR	IR	IRMA	IRMA	IR	IRMA

CSCI 262 Project Management	Curriculum Map						
Program Outcomes	apply appropriate knowledge of computing and mathematics.	analyze a problem, and identify and define the appropriate computing requirements.	design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities.	communicate effectively with a range of audiences.	use current techniques, skills, and tools necessary for computing practice.	demonstrate understanding of computer hardware, software, networks, security and project management necessary to pursue industry-based certifications.
Course SLO: Students will be able to							
define a project, list attributes and describe the triple constraint of project management.	IRA		IR	IRMA	IRMA	IR	IRMA
describe project management and key elements of the project management framework.	IRA		IR	IRMA	IRMA	IR	IRMA
explain the relationship between project, program and portfolio management.	IRA		IR	IRMA	IRMA	IR	IRMA
describe the role of the project manager and the skills required.	IRA		IR	IRMA	IRMA	IR	IRMA
explain the critical role of stakeholder management and top management commitment.	IRA		IR	IRMA	IRMA	IR	IRMA
distinguish between project development and product development.	IRA		IR	IRMA	IRMA	IR	IRMA
describe recent trends including globalization, outsourcing and virtual teams.	IRA		IR	IRMA	IRMA	IR	IRMA
explain why a project charter is important.	IRA		IR	IRMA	IRMA	IR	IRMA
describe the integrated change control process.	IRA		IR	IRMA	IRMA	IR	IRMA
explain the importance of good project scope management.	IRA		IR	IRMA	IRMA	IR	IRMA

describe how to create a work breakdown structure.	IRA		IR	IRMA	IRMA	IR	IRMA
explain the use of a Gantt chart and how to determine the critical path of a project.	IRA		IR	IRMA	IRMA	IR	IRMA
describe different approaches to estimating cost and impact to a project.	IRA		IR	IRMA	IRMA	IR	IRMA
describe tools and techniques commonly used for quality control.	IRA		IR	IRMA	IRMA	IR	IRMA
discuss project human resource management and key concepts for managing people.	IRA		IR	IRMA	IRMA	IR	IRMA
assign resources, mange resource loading and achieve resource leveling.	IRA		IR	IRMA	IRMA	IR	IRMA
create and improve communication management plans.	IRA		IR	IRMA	IRMA	IR	IRMA
create a risk management plan.	IRA		IR	IRMA	IRMA	IR	IRMA