Computer Science Information Systems - AS

Course to Program Map — Fall 2024

Courses	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
CSCI 101 - Introduction to Management Information Systems	15	I	I	I	IRMA	IR	I
CSCI 102 - Introduction to Programming	3	IRMA	IRMA	IRMA		IRMA	IR
CSCI 107 - Advanced Programming	3	IRM	RMA	RMA	IR	RMA	
CSCI 110 - Intro to Computer Concepts and Applications	15	IRA	I	I	I	I	IRA
CSCI 123 - IT Essentials (ITF+)	3	IRMA	IR	IR			IRMA
CSCI 125 - IT Essentials: Hardware (A+)	3	IRMA	IR	IR			IRMA
CSCI 126 - IT Essentials: Software (A+)	3	IRMA	IR	IR			IRMA
CSCI 130 - Introduction to Cybersecurity	1235	IRMA	IR	IR	IRMA	IRMA	IR
CSCI 140 - Overview of Computer Science	12345	IRMA	IR	IR	IRMA	IRMA	IR
CSCI 150 - Network Essentials (Network+)	3	IR	IRMA	IRMA			IRMA
CSCI 190 - Computer Ethics	12345				IRMA	IR	
CSCI 192 - Introduction to Artificial Intelligence	12345				IRMA	IR	
CSCI 230 - Security Essentials (Security+)	1235	IRMA	IR	IR	IRMA	IRMA	IR
CSCI 262 - Project Management	12345	IR		IR	IRMA	IRMA	IR
CSCI 290 - Data Analytics (Data+)	12345	IR	IRMA	IRMA	IR	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	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
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	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
Course SLO: Students will be able to						
Describe and utilize primitive data types appropriately files and arrays.	IRMA	I	I			
Utilize the input/output structure of the terminal to receive and display data	IR	I	IR			
Identify and utilize control structure through loops and logic statements appropriately	I	IRMA	I			
Identify and utilize non-primitive data types such as lists, tuples, and dictionaries.	IRMA	I	I			
Understand and utilize the principle of mutability and immutability on those data types.	I	IR	IRMA			
Procedurally define and utilize functions to write efficient and readable code	IRMA	IR	IRMA		IR	
Utilize documentation correctly including comments and docstrings		I			IRMA	I
Evaluate code for syntax and accuracy	I				IR	IR
Write programs to solve coding problems	IRMA	IR			IRMA	
Verbally and in writing reason through logic of coding problems using appropriate vocabulary	IR	I			I	

CSCI 107 - Advanced Programming

Curriculum Map

Program Outcomes Course SLO: Students will be able to	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	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
Utilize lists, dictionaries, and functions to solve programming tasks	RM	R	R			
Write code using object-oriented programming	R	R	RMA		RM	
Describe verbally and in writing the purpose and functionality of Python classes and		RMA			RM	
Implement magic methods in object oriented programming	IR	R	R			
Utilize exceptions to catch and correct errors			IR	IR	RMA	
Utilize the turtle graphics library to solve graphics related programming tasks	RM	RMA	R			
Create layouts and GUI's using the Tkinter library	R	R	RMA		R	
Manipulate data using traditional methods as well as the Pandas package	IRM	R	RMA			
Understand and implement algorithms for searching and sorting.	R	RMA	R		RM	

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	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
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.	IRA	I	I		I	IRA
create spreadsheets and charts for problem-solving.	IRA	I	I		I	IRA
utilize a database.	I	I	I			I
use presentation software to create, edit, and produce professional presentations.	IRA	I	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 123 - IT Essentials (ITF+)	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	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
Course SLO: Students will be able to						
1. Comprehend notational systems, illustrate the basics of computing, and explain the value of data and troubleshooting. (IT Concepts & Terminology)	**IRMA**	**IR**	**IR**			**IRMA**
2. Know how to set up and install common peripheral devices to a laptop/PC or secure a basic wireless network. (Infrastructure)	**IRMA**	**IR**	**IR**			**IRMA**
3. Mange applications software, understand the various components of an operating system and explain the purpose of methods of application architecture. (Applications & Software)	**IRMA**	**IR**	**IR**			**IRMA**
4. Comprehend programming language	**IR**	**IR**	**IR**			**IR**
5. Able to explain database concepts, structures, and purpose, as well understand methods used to interface. (Database Fundamentals)	**IR**	**IR**	**IR**			**IR**
6. Understand confidentiality, integrity, and availability concerns of secure devices and best practice methods. (Security)	**IR**	**IR**	**IR**			**IR**

CSCI 125 - IT Essentials: Hardware (A+)	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	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
Course SLO: Students will be able to						
illustrate the installation, configuration and troubleshooting of current operating systems.	IRMA	IR	IR			IRMA
identify basic computer components.	IRMA	IR	IR			IRMA
identify, install and troubleshoot computer processors.	IRMA	IR	IR			IRMA
identify, install and troubleshoot memory.	IRMA	IR	IR			IRMA
identify, install and troubleshoot peripherals.	IR	IR	IR			IR
identify, install and troubleshoot video components.	IR	IR	IR			IR
identify, install and troubleshoot storage media.	IR	IR	IR			IR
identify, install and troubleshoot input and output ports and cables.	IR	IR	IR			IR
identify, install and troubleshoot printers.	IR	IR	IR			IR
identify, install, troubleshoot and configure basic networks and components.	IR	IR	IR			IR

CSCI 126 - IT Essentials: Software (A+)	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**	**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**
Course SLO: Students will be able to						
illustrate the installation, configuration and troubleshooting of current operating systems.	**IRMA**	**IR**	**IR**			**IRMA**
compare and contrast the features and requirements of various Microsoft Operating Systems.	**IRMA**	**IR**	**IR**			**IRMA**
demonstrate use of networking, OS and recovery console command line tools.	**IRMA**	**IR**	**IR**			**IRMA**
configure and troubleshoot a network client/desktop device.	**IRMA**	**IR**	**IR**			**IRMA**
perform preventative maintenance procedures.	**IR**	**IR**	**IR**			**IR**
demonstrate use of basic network, OS and data security.	**IR**	**IR**	**IR**			**IR**
identify and integrate mobile devices.	**IR**	**IR**	**IR**			**IR**
demonstrate common troubleshooting methods.	**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	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
Course SLO: Students will be able to						
describe the importance of cybersecurity.	IRMA	IR	IR	IRMA	IRMA	IR
discuss access control models.	IRMA	IR	IR	IRMA	IRMA	IR
explain cryptographic concepts.	IRMA	IR	IR	IRMA	IRMA	IR
design the protections to ensure physical security.	IRMA	IR	IR	IRMA	IRMA	IR
explain the role of authentication technologies.	IRMA	IR	IR	IRMA	IRMA	IR
distinguish physical intrusion, process security, memory and file system security issues.	IRMA	IR	IR	IRMA	IRMA	IR
discuss application program security.	IRMA	IR	IR	IRMA	IRMA	IR
examine the threat of insider attacks, viruses, malware and privacy invasive software.	IRMA	IR	IR	IRMA	IRMA	IR
discuss network security concepts.	IRMA	IR	IR	IRMA	IRMA	IR
define denial-of-service attacks and discuss their potential impact.	IRMA	IR	IR	IRMA	IRMA	IR
describe the application layer and DNS.	IRMA	IR	IR	IRMA	IRMA	IR
explain the role of firewalls and tunneling.	IRMA	IR	IR	IRMA	IRMA	IR
discuss intrusion detection and attacks on clients and servers.	IRMA	IR	IR	IRMA	IRMA	IR
explain how digital signatures work.	IRMA	IR	IR	IRMA	IRMA	IR
discuss the role of security standards and evaluation.	IRMA	IR	IR	IRMA	IRMA	IR
design a software vulnerability assessment.	IRMA	IR	IR	IRMA	IRMA	IR

CSCI 140 - Overview of Computer Science

Curriculum Map

Course SLO: Students will be able to	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	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
define algorithms and give historical examples.	IRMA	IR	IR	IRMA	IRMA	IR
discuss programming and how programs are constructed.	IRMA	IR	IR	IRMA	IRMA	IR
define data storage and describe how data is stored.	IRMA	IR	IR	IRMA	IRMA	IR
evaluate Boolean operations used to construct logic gates.	IRMA	IR	IR	IRMA	IRMA	IR
discuss data compression and some of the techniques.	IRMA	IR	IR	IRMA	IRMA	IR
describe the role of the CPU, bus and motherboard.	IRMA	IR	IR	IRMA	IRMA	IR
discuss machine instructions and machine language.	IRMA	IR	IR	IRMA	IRMA	IR
explain the machine cycle: fetch, decode, execute.	IRMA	IR	IR	IRMA	IRMA	IR
state the key functions of the operating system.	IRMA	IR	IR	IRMA	IRMA	IR
describe how the operating system handles competing demands for resources.	IRMA	IR	IR	IRMA	IRMA	IR
explain fundamental network concepts.	IRMA	IR	IR	IRMA	IRMA	IR
describe the stages of the software life cycle.	IRMA	IR	IR	IRMA	IRMA	IR
discuss various software engineering methodologies.	IRMA	IR	IR	IRMA	IRMA	IR
define a database and discuss the fundamental concepts.	IRMA	IR	IR	IRMA	IRMA	IR
describe an artificial neural network.	IRMA	IR	IR	IRMA	IRMA	IR
discuss the role of artificial intelligence.	IRMA	IR	IR	IRMA	IRMA	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	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
Course SLO: Students will be able to						
discuss computer network fundamentals including various network topologies	IR	IRMA	IRMA			IRMA
discuss the ISO/OSI reference model and the function of the different network layers.	IR	IRMA	IRMA			IRMA
describe the components of a computer network including media and network devices.	IR	IRMA	IRMA			IRMA
discuss the role of the Ethernet.	IR	IRMA	IRMA			IRMA
discuss IP address and subnets.	IR	IRMA	IRMA			IRMA
discuss the traffic routing process.	IR	IRMA	IRMA			IRMA
discuss WANs and LANs.	IR	IRMA	IRMA			IRMA
discuss the optimization of network performance.	IR	IRMA	IRMA			IRMA
discuss network management.	IR	IRMA	IRMA			IRMA
discuss network security.	IR	IRMA	IRMA			IRMA
discuss troubleshooting network issues.	IR	IRMA	IRMA			IRMA
discuss preparation for industry certification testing.	IR	IRMA	IRMA			IRMA

CSCI 190 - Computer Ethics	Curriculum Map					
Course SLO: Students will be able to	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	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
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 192 - Introduction to Artificial Intelligence	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**	**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**
Course SLO: Students will be able to						
Provide examples of artificial intelligence				**IRMA**	**IR**	
Describe how artificial intelligence works				**IRMA**	**IR**	
Discuss how AI technologies could affect employment and education				**IRMA**	**IR**	
Discuss the legal, moral, and ethical implications of artificial intelligence				**IRMA**	**IR**	
Explain the evolution of artificial intelligence				**IRMA**	**IR**	
Examine various career options related to artificial intelligence				**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	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
Course SLO: Students will be able to						
describe how to calculate risk and five approaches to managing risk	IRMA	IR	IR	IRMA	IRMA	IR
describe ways to monitor and diagnose networks	IRMA	IR	IR	IRMA	IRMA	IR
discuss the impact of devices and infrastructure on security	IRMA	IR	IR	IRMA	IRMA	IR
describe the roles of access control, authentication, and authorization	IRMA	IR	IR	IRMA	IRMA	IR
describe common vulnerabilities of wireless network security	IRMA	IR	IR	IRMA	IRMA	IR
list cloud service models, delivery models and types of hypervisors	IRMA	IR	IR	IRMA	IRMA	IR
discuss the weaknesses and vulnerabilities of the various applications	IRMA	IR	IR	IRMA	IRMA	IR
discuss cryptography using either symmetric or asymmetric algorithms	IRMA	IR	IR	IRMA	IRMA	IR
discuss various types of attacks from malware, vulnerabilities, and threats	IRMA	IR	IR	IRMA	IRMA	IR
describe the process of social engineering and other foes	IRMA	IR	IR	IRMA	IRMA	IR
discuss the role of education and legislation on security administration	IRMA	IR	IR	IRMA	IRMA	IR
discuss backup planning, disaster recovery and incident response	IRMA	IR	IR	IRMA	IRMA	IR

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**	**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**
Course SLO: Students will be able to						
define a project, list attributes and describe the triple constraint of project management.	IR		IR	IRMA	IRMA	IR
describe project management and key elements of the project management framework.	IR		IR	IRMA	IRMA	IR
explain the relationship between project, program and portfolio management.	IR		IR	IRMA	IRMA	IR
describe the role of the project manager and the skills required.	IR		IR	IRMA	IRMA	IR
explain the critical role of stakeholder management and top management commitment.	IR		IR	IRMA	IRMA	IR
distinguish between project development and product development.	IR		IR	IRMA	IRMA	IR
describe recent trends including globalization, outsourcing and virtual teams.	IR		IR	IRMA	IRMA	IR
explain why a project charter is important.	IR		IR	IRMA	IRMA	IR
describe the integrated change control process.	IR		IR	IRMA	IRMA	IR
explain the importance of good project scope management.	IR		IR	IRMA	IRMA	IR
describe how to create a work breakdown structure.	IR		IR	IRMA	IRMA	IR
explain the use of a Gantt chart and how to determine the critical path of a project.	IR		IR	IRMA	IRMA	IR

describe different approaches to estimating cost and impact to a project.	IR		IR	IRMA	IRMA	IR
describe tools and techniques commonly used for quality control.	IR		IR	IRMA	IRMA	IR
discuss project human resource management and key concepts for managing people.	IR		IR	IRMA	IRMA	IR
assign resources, mange resource loading and achieve resource leveling.	IR		IR	IRMA	IRMA	IR
create and improve communication management plans.	IR		IR	IRMA	IRMA	IR
create a risk management plan.	IR		IR	IRMA	IRMA	IR

CSCI 290 - Data Analytics (Data+)	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	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
Course SLO: Students will be able to						
Identify basic concepts of data schemas and dimensions and explain the difference between common data structures and file formats	IR	IRMA	IRMA	IR	IR	IRMA
Explain data acquisition concepts, reasons for cleansing and profiling datasets, and manipulate data to prepare it for analysis	IR	IRMA	IRMA	IR	IR	IRMA
Apply the appropriate descriptive statistical methods and explain and interpret the outputs of analyses.	IR	IRMA	IRMA	IR	IR	IRMA
Communicate the insights of analysis through the conceptualization and the development of appropriate visualizations	IR	IRMA	IRMA	IR	IR	IRMA
Summarize important data governance concepts and apply data quality control concepts.	IR	IRMA	IRMA	IR	IR	IRMA
Articulate the importance and impact of an ethical use of modern data analytics on business, society, and personal concerns	IR	IRMA	IRMA	IR	IR	IRMA