INDIANA COMMISSION for HIGHER EDUCATION

Computing Foundations for a Digital Age (4565)

This document provides correlations between the draft proposed standards for Computing Foundations for a Digital Age (4565) shared in this IDOE memo on May 31, 2024 and the final course standards found here. This correlation guide is intended to help support instructors who may have already begun teaching this course utilizing the previously shared draft standards.

Original Draft Course Competency/ Standard		Finalized Course Competency/ Standard		Differences Between Draft and Final
Domain: Computer Science				
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
4565.D1.1	Students create an understanding of computer science and explore how it impacts their everyday lives.			
4565.D1.2	Create a definition of computer science and computational thinking and explore growing and emerging careers in the computer science and information technology fields, as well as how changing technology impacts careers in all sectors.			
4565.D1.3	Demonstrate awareness of the history of computing.	4565.D3.1	Demonstrate awareness of the history of computing.	Moved to Networks & the Internet Domain.
4565.D1.4	Investigate trends in computer science and their impact on society.			
4565.D1.5	Summarize ethical issues within computer science.			

Domain: Computers, Devices, and Other Technologies				
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
4565.D2.1	Students analyze computer devices and other technologies to build an understanding of their impact on society and how to use them appropriately.			
4565.D2.2	Demonstrate understanding of the hardware and operating systems of computers and identify and analyze aspects such as functionality, cost, size, speed, accessibility, and aesthetics of hardware and software.	4565.D4.2	Identify various types of hardware (including components) and software (including operating systems) and explore the security practices, functionality, cost, accessibility, and aesthetics of a variety of hardware and software.	Language clarified. Standard moved to Computing Systems and Security Domain.
		4565.D4.4	Explain how an operating system, other software, and hardware work together.	Broken into two different standards with 4565.D4.2. Moved to Computing Systems and Security Domain.
4565.D2.3	Discuss the ethical and appropriate use of computer devices and examine device usability through several lenses including accessibility, ergonomics, and learnability.	4565.D3.5	Discuss the ethical and appropriate use of computer devices and examine device usability through several lenses including accessibility, ergonomics, and learnability.	Moved to Networks & the Internet Domain.
4565.D2.4	Explore the fundamental principles and components of computer networking.	4565.D3.2	Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.	Language updated for clarity. Moved to Networks & the Internet Domain.
		4565.D4.3	Explain what networks (including the Internet) are and explore the fundamental principles and components of computer networking.	Language updated for clarity. Moved to Computing Systems and Security Domain.

4565.D2.5	Examine the impact of the Internet on society.	4565.D3.6	Examine the impact of the Internet on society.	Moved to Networks & the Internet Domain.
4565.D2.6	Investigate the use of artificial intelligence by individuals and society.			
4565.D2.7	Investigate innovations in computing, including robotics and the Industrial Internet of Things (IIoT).			
Original Draft Course Competency/ Standard		**Finalized Course Competency/ Standard**		**Differences Between Draft and Final**
Domain: Programming and Development				
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
4565.D3.1	Students connect the process of developing a computing artifact (ex. computer application, web application, operating system, artificial intelligence) with the skills needed during the development process to have a better understanding of what it takes to build a computing artifact.	4565.D1.2	Define algorithm and explain what algorithms are used for.	Language clarified/updated. Moved to Algorithms & Planning Domain.
		4565.D1.4	Explain why/how sequence matters in an algorithm.	Language clarified/updated. Moved to Algorithms & Planning Domain.
		4565.D1.6	Compare (at a high level) the trade-offs (e.g., speed, memory) of different algorithms.	Language clarified/updated. Moved to Algorithms & Planning Domain.
		4565.D1.7	Reference documentation and other online tools to assist with programming.	Language clarified/updated. Moved to Algorithms & Planning Domain.
4565.D3.2	Use the design process to iteratively develop a computing artifact.	4565.D1.5	Interpret and modify algorithms (e.g., to add functionality).	Language clarified/updated. Moved to Algorithms & Planning Domain.

4565.D3.3	Demonstrate competencies of programming constructs, including use of data types and variables, control structures (sequencing, looping, branching), and modularity (such as a function).	4565.D1.8	Interpret the function of a segment of code and convert an algorithm to code.	Language clarified/updated. Moved to Algorithms & Planning Domain.
		4565.D2.1	Identify and define data types (e.g., string, numeric, Boolean) and how it is created, stored, and used by computers.	Language clarified/updated. Moved to Data & Analysis Domain.
4565.D3.4	Understand how abstractions hide implementation details when used in everyday objects.			
4565.D3.5	Use abstraction to manage program complexity (such as a function to create recallable code).			
4565.D3.6	Formulate algorithms using programming structures to decompose a complex problem.	4565.D1.9	Formulate algorithms using programming structures to decompose a complex problem.	Moved to Algorithms & Programming Domain.
4565.D3.7	Assess a program by testing to verify correct behavior.	4565.D1.10	Assess a program by testing to verify correct behavior.	Moved to Algorithms & Programming Domain.
4565.D3.8	Construct a computing artifact that has a user interface.			
4565.D3.9	Produce an artifact that includes rich media (e.g., text, graphics, animations, or video).			
4565.D3.10	Illustrate knowledge of good programming practice including the use of conventional standards and comments.	4565.D1.1	Illustrate knowledge of good programming practice including the use of conventional standards and comments.	Moved to Algorithms & Programming Domain.

Original Draft Course Competency/ Standard		Final Course Competency/ Standard		Differences between Draft and Final
Domain: Data				
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
4565.D4.1	Students describe the types of data and how it is created, stored, and used by computers.	4565.D2.2	Identify basic data formats (e.g., tables, schemas, JSON) and how computers represent data.	Language clarified/updated. Moved to Data & Analysis Domain.
4565.D4.2	Understand how computers represent data, including text, sound, images, and numbers.			
4565.D4.3	Create data visualizations, models, and simulations using data collected using computational tools such as surveys.	4565.D2.5	Transform and prepare (e.g., normalize, merge, clean) data visualizations, models, and simulations using data collected using computational tools such as surveys.	Language clarified/updated. Moved to Data & Analysis Domain.
		4565.D2.7	Evaluate approaches to cleaning data in a given context.	Language clarified/updated. Moved to Data & Analysis Domain.
4565.D4.4	Evaluate data to better understand the world.			
4565.D4.5	Explore the relationship between information and data.	4565.D2.3	Understand the difference between data and metadata.	Language clarified/updated. Moved to Data & Analysis Domain.
		4565.D2.4	Describe how different types of data (e.g., audio, visual, spatial, environmental) can be collected computationally.	Language clarified/updated. Moved to Data & Analysis Domain.

Original Draft Course Competency/ Standard		Final Course Competency/ Standard		Differences Between Draft and Final
Domain: Security and Privacy				
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
4565.D5.1	Examine the dynamic between privacy and security.	4565.D4.1	Examine the dynamic between privacy and security.	Moved to Computing Systems and Security Domain.
4565.D5.2	Explain the privacy concerns related to the collection and generation of data through implicit and explicit processes.	4565.D5.1	Explain the privacy concerns related to the collection and generation of data through implicit and explicit processes.	Moved to Impacts of Computing Domain.
4565.D5.3	Evaluate the social and emotional implications of privacy in the context of safety, law, and ethics.	4565.D4.5	Describe why cybersecurity is important and evaluate the social and emotional implications of privacy in the context of safety, law, and ethics.	Language updated/clarified. Moved to Computing Systems and Security Domain.
4565.D5.4	Give examples to illustrate how sensitive data can be affected by malware and other attacks.			
4565.D5.5	Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical implications.	4565.D3.3	Compare various security measures, considering tradeoffs between the usability and security of a computing system.	Language clarified. Moved to Networks & the Internet Domain.
		4565.D3.4	Explain tradeoffs when selecting and implementing cybersecurity recommendations.	Language clarified. Moved to Networks & the Internet Domain.
4565.D5.6	Discuss the laws surrounding intellectual property.	4565.D5.2	Discuss the laws surrounding intellectual property.	Moved to Impacts of Computing Domain.
4565.D5.7	Examine tradeoffs in computing technologies through current events related to broad ideas including privacy, communication, and automation (i.e.	4565.D5.3	Examine tradeoffs in computing technologies through current events related to broad ideas including privacy, communication, and automation (i.e.	Moved to Impacts of Computing Domain.

	driverless cars can increase convenience and reduce accidents, but they are susceptible to hacking. The emerging industry will reduce the number of taxi and ride-share drivers but will create software engineering and cybersecurity jobs).		driverless cars can increase convenience and reduce accidents, but they are susceptible to hacking. The emerging industry will reduce the number of taxi and ride-share drivers but will create software engineering and cybersecurity jobs).	
Original Draft Course Competency/ Standard		**Final Course Competency/ Standard**		**Differences Between Draft and Final**
		Domain: Algorithms & Programming		
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
		4565.D1.3	Describe the difference between traditional algorithms and artificial intelligence/machine learning (AI/ML) algorithms and, at a high level, describe how AI/ML algorithms work.	Standard included in draft course competencies.
		Domain: Data & Analysis		
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
		4565.D2.6	Analyze data using computational thinking principles to make inferences or predictions.	Standard included in draft course competencies.
		4565.D2.8	Assess whether and how a given question can be answered using computational methods and data, and what specific data is needed.	Standard included in draft course competencies.
		Domain: Computing Systems and Security		
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
		4565.D4.6	Optimize operating systems and other software settings to achieve goals.	Standard included in draft course competencies.

		4565.D4.7	Use documentation and other resources to guide tasks such as installation and troubleshooting.	Standard included in draft course competencies.
		Domain: Impacts of Computing		
Number	**Competency/Standard**	**Number**	**Competency/Standard**	**Description**
		4565.D5.4	Examine how emerging technologies are impacting a variety of practices (e.g., use of facial recognition in policing, AI-generated news products).	Standard included in draft course competencies.
		4565.D5.5	Evaluate the use of emerging technologies (e.g., generative AI) for accuracy and to meet specific needs.	Standard included in draft course competencies.