

CompuScholar, Inc.

Alignment to the Indiana NLPS Standards for 4565 - Computing Foundations for a Digital Age

Indiana Course Details:

Course Name:	4565 - Computing Foundations for a Digital Age
Credit:	0.5 - 1.0
Standards Link:	https://drive.google.com/file/d/10rIrcTAdQJ1HVALFP_bqbv4V9taWvtEL/view

CompuScholar Course Details:

Course Title:	Computer Science Foundations
Course ISBN:	978-1-946113-02-3
Course Year:	2025

Course Description (from the standards link)

Computers and the internet have revolutionized the way we access and disseminate information. As technology continues to change at an ever-increasing pace, the need for students to gain a foundational understanding of computer science is clear. Computing Foundations for a Digital Age is designed to introduce students to five major topics within computer science including computing systems, networks and the internet, data and analysis, algorithms and planning, and impacts of computing. The course introduces foundational computing concepts while exploring current events and building critical thinking, collaboration, problem solving, and other important skills that are invaluable for life in a global and technologically advancing society.

Course Standards

Note 1: Citation(s) listed may represent a subset of the instances where objectives are met throughout the course.

Note 2: Citation(s) for a "Lesson" refer to the "Lesson Text" elements and associated "Activities" within the course, unless otherwise noted. The "Instructional Video" components are supplements designed to introduce or reinforce the main lesson concepts, and the Lesson Text contains full details.

Competency	Citation(s)
Domain: Algorithms and Programming	
4565.D1.1: Define algorithm and explain what algorithms are used for.	Chapter 15, Lessons 1, 3
4565.D1.2: 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.	Supplemental Chapter 3, Lesson 1
4565.D1.3: Explain why/how sequence matters in an algorithm.	Chapter 9, Lesson 4 Chapter 15, Lesson 1
4565.D1.4: Interpret and modify algorithms (e.g., to add functionality).	Chapter 15, Lesson 3 Chapter 15 Activity

4565.D1.5: Compare (at a high level) the trade-offs (e.g., speed, memory) of different algorithms.	Chapter 9, Lesson 4
4565.D1.6: Reference documentation and other online tools to assist with programming.	Chapter 7, Lesson 2
4565.D1.7: Interpret the function of a segment of code and convert an algorithm to code.	Chapter 9, Lesson 4 Chapter 15 (All Lessons)
4565.D1.8: Formulate algorithms using programming structures to decompose a complex problem.	Chapter 12, Lessons 1, 4 Chapter 15, Lessons 1, 2
4565.D1.9: Assess a program by testing to verify correct behavior.	Chapter 7, Lessons 2, 3, Activity
4565.D1.10: Illustrate knowledge of good programming practice including the use of conventional standards and comments.	Chapter 3, Lesson 3 Chapter 4, Lesson 2 Chapter 12, Lesson 1 Chapter 15, Lessons 1, 2
Domain: Data & Analysis	
4565.D2.1: Identify and define data types (e.g., string, numeric, Boolean) and how it is created, stored, and used by computers.	Chapter 4 (All Lessons)
4565.D2.2: Identify basic data formats (e.g., tables, schemas, JSON) and how computers represent data.	Chapter 4, Lessons 1, 2 Chapter 11, Lesson 1 Chapter 17, Lessons 3, 4 Supplemental Chapter 3, Lesson 2
4565.D2.3: Understand the difference between data and metadata.	Chapter 17, Lesson 1
4565.D2.4: Describe how different types of data (e.g., audio, visual, spatial, environmental) can be collected computationally.	Chapter 17, Lesson 2 Chapter 18, Lesson 3
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.	Chapter 17, Lessons 2, 3 Chapter 17 Activity
4565.D2.6: Analyze data using computational thinking principles to make inferences or predictions.	Chapter 17, lessons 1, 3 Chapter 17 Activity
4565.D2.7: Evaluate approaches to cleaning data in a given context.	Chapter 17, Lesson 2
4565.D2.8: Assess whether and how a given question can be answered using computational methods and data, and what specific data is needed.	Chapter 17, Lessons 1, 2, 3
Domain: Networks & the Internet	
4565.D3.1: Demonstrate awareness of the history of computing.	Chapter 1, Lessons 1, 2, 3
4565.D3.2: Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.	Chapter 2, Lessons 1, 2, 3

4565.D3.3: Compare various security measures, considering tradeoffs between the usability and security of a computing system.	Chapter 20, Lesson 2
4565.D3.4: Explain tradeoffs when selecting and implementing cybersecurity recommendations.	Chapter 20, Lesson 2
4565.D3.5: Discuss the ethical and appropriate use of computer devices and examine device usability through several lenses including accessibility, ergonomics, and learnability.	Chapter 18, Lesson 1 Chapter 19, Lesson 1
4565.D3.6: Examine the impact of the Internet on society.	Chapter 18 (All Lessons)
Domain: Computing Systems and Security	
4565.D4.1: Examine the dynamic between privacy and security.	Chapter 20, Lesson 2
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	Chapter 1, Lessons 2, 3 Chapter 2, Lesson 1 Chapter 20, Lessons 2, 3 Chapter 26, Lessons 2, 3
4565.D4.3: Explain what networks (including the Internet) are and explore the fundamental principles and components of computer networking.	Chapter 2, Lessons 1, 2
4565.D4.4: Explain how an operating system, other software, and hardware work together.	Chapter 1, Lesson 3
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.	Chapter 19, Lesson 1 Chapter 20, Lesson 3
4565.D4.6: Optimize operating systems and other software settings to achieve goals.	Chapter 26, Lessons 2, 3
4565.D4.7: Use documentation and other resources to guide tasks such as installation and troubleshooting.	Chapter 7, Lessons 2, 3
Domain: Impacts of Computing	
4565.D5.1: Explain the privacy concerns related to the collection and generation of data through implicit and explicit processes.	Chapter 20, Lesson 3
4565.D5.2: Discuss the laws surrounding intellectual property.	Chapter 19, Lessons 2, 3
4565.D5.3: Examine tradeoffs in computing technologies through current events related to broad ideas including privacy, communication, and automation (example omitted...)	Chapter 18, Lesson 2
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).	Chapter 18, Lessons 2, 3
4565.D5.5: Evaluate the use of emerging technologies (e.g., generative AI) for accuracy and to meet specific needs.	Chapter 18 (All Lessons) Supplemental Chapter 3, Lessons 1, 3