PLTW Launch Standards Guide

North Carolina Computer Science Standards (K-5)

PLTW Launch Modules have been thoughtfully connected to the NC Computer Science standards for use by NC educators. Each grade level shows the PLTW Launch Modules that are a “best-fit” for the NC Science Standards; for consistency, the same modules are used in this guide. When grade level suggestions vary from the intended grade level it is shown like this: *Light and Sound (1)* to indicate that the module was originally developed for use in 1st Grade.

Two pages for each level of standards are included: the first view highlights the PLTW Launch Modules that focus on Computer Science more explicitly and provide instruction on the greatest number of standards. The second view highlights the satndards connections to all PLTW Launch Modules by grade level.

Please note: The information included in this document is subject to change. As with all course materials, we will continue to update as more information becomes available.

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K-2 Computer Science

		Animals and Algorithms Kindergarten	Animated Storytelling 1st Grade	Grids and Games 2nd Grade
Computing Systems	K2-CS-01 Choose appropriate devices to perform a variety of classroom tasks.			
	K2-CS-02 Describe the function of common physical components of computing systems (hardware) with appropriate terminology.		✓	✓
	K2-CS-03 Operate appropriate software to perform a variety of tasks.	✓	✓	✓
	K2-CS-04 Describe basic hardware and software problems with accurate terminology.		✓	✓
Networks and the Internet	K2-NI-01 Illustrate how information is broken down into smaller pieces and can be reassembled.			
	K2-NI-02 Apply knowledge of what passwords are and why we use strong passwords to protect devices and information from unauthorized access.		✓	✓
	K2-NI-03 Discover your digital footprint and how personal information can be protected.	✓	✓	✓
Data & Analysis	K2-DA-01 Store, copy, search, retrieve, modify, and delete information using a computing device.		✓	✓
	K2-DA-02 Define information stored on a computing device as data.			
	K2-DA-03 Collect and present the same data in various visual formats.			
	K2-DA-04 Make predictions with patterns in data visualizations.			
Algorithms & Programming	K2-AP-01 Model daily processes with algorithms to complete tasks.		✓	
	K2-AP-02 Demonstrate how programs store and manipulate data by using numbers or other symbols to represent information.	✓	✓	✓
	K2-AP-03 Develop programs with sequences and simple loops to express ideas or address a problem.	✓	✓	✓
	K2-AP-04 Decompose the steps needed to solve a problem into a precise sequence of instructions.	✓	✓	✓
	K2-AP-05 Develop plans that describe a program's sequence of events, goals, and expected outcomes.	✓	✓	✓
	K2-AP-06 Give attribution when using the ideas and creations of others while developing programs.		✓	✓
	K2-AP-07 Identify and debug errors in an algorithm or program that includes sequences and simple loops.	✓	✓	✓
	K2-AP-08 Using correct terminology, describe steps taken and choices made during the iterative process of program development.	✓	✓	✓
Impacts of Computing	K2-IC-01 Compare how people live and work before and after the implementation or adoption of new computing technology.		✓	✓
	K2-IC-02 Select software that meets the diverse needs and preferences for the technology individuals use in the classroom.			
	K2-IC-03 Work respectfully and responsibly with others online.	✓	✓	✓
	K2-IC-04 Model responsible login and logoff procedures on all devices.	✓	✓	✓

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K-2 Computer Science

		Kindergarten								1st Grade					2nd Grade					
		Structure and Function: Exploring Design	Spacial Sense and Coding (PK)	Living and Nonliving Things (PK)	Animal Adaptations (!)	Designs Inspired by Nature (!1)	Sunlight and Weather	Structure and Function: Human Body	Animals and Algorithms	Pushes and Pulls (K)	Living Things: Needs and Impacts (K)	Living Things: Diversity of Life (2)	Light: Observing the Sun, Moon, and Stars	Animated Storytelling	Light and Sound (1)	Life Cycles and Survival (3)	Variation of Traits (3)	Weather: Factors and Hazards (3)	Materials Science: Form and Function	Grids and Games
Computing Systems	K2-CS-01																			
	K2-CS-02													✓						✓
	K2-CS-03								✓					✓						✓
	K2-CS-04													✓						✓
Networks and the Internet	K2-NI-01																			
	K2-NI-02													✓						✓
	K2-NI-03								✓					✓						✓
Data & Analysis	K2-DA-01											✓		✓						✓
	K2-DA-02																			
	K2-DA-03						✓										✓	✓		
	K2-DA-04				✓		✓						✓			✓	✓	✓		
Algorithms & Programming	K2-AP-01													✓						
	K2-AP-02								✓					✓						✓
	K2-AP-03								✓					✓						✓
	K2-AP-04				✓	✓	✓		✓			✓	✓	✓					✓	✓
	K2-AP-05								✓					✓						✓
	K2-AP-06													✓						✓
	K2-AP-07								✓					✓						✓
	K2-AP-08								✓					✓						✓
Impacts of Computing	K2-IC-01													✓						✓
	K2-IC-02																			
	K2-IC-03	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	K2-IC-04	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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3-5 Computer Science

		Programming Patterns 3rd Grade	Input/Output: Computer Systems 4th Grade	Robotics and Automation: Challenge 5th Grade	Infection: Modeling and Simulation 5th Grade
Computing Systems	35-CS-01 Evaluate the features available on digital devices to perform a variety of classroom tasks.				
	35-CS-02 Model how computer hardware and software work together as a system to accomplish tasks.	✓	✓		
	35-CS-03 Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.	✓	✓		
Networks and the Internet	35-NI-01 Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination.		✓		
	35-NI-02 Explain your digital footprint and how personal information can be protected.	✓	✓		
Data & Analysis	35-DA-01 Identify the type of data encoded in a file based on file extension.				
	35-DA-02 Illustrate the process of file management and version control.				
	35-DA-03 Organize and present collected data visually to highlight relationships and support a claim.		✓		✓
	35-DA-04 Communicate using data to highlight or predict outcomes.				✓
Algorithms & Programming	35-AP-01 Create multiple algorithms for the same task to determine which is the most accurate and efficient.	✓	✓	✓	✓
	35-AP-02 Create programs that use variables to store and modify data.		✓		✓
	35-AP-03 Construct programs that include sequences.	✓	✓	✓	✓
	35-AP-04 Construct programs using simple loops.	✓	✓	✓	✓
	35-AP-05 Construct programs that implement conditionals.	✓	✓	✓	✓
	35-AP-06 Decompose problems into smaller, manageable, subproblems to facilitate the program development process.	✓	✓	✓	✓
	35-AP-07 Modify, remix, or incorporate portions of an existing program into one's own work.		✓		✓
	35-AP-08 Apply an iterative process to the development of a program by including diverse perspectives and considering user preferences.	✓	✓	✓	✓
	35-AP-09 Give appropriate attribution when creating or remixing programs while respecting intellectual property rights.		✓		✓
	35-AP-10 Identify and debug erros in an algorithm or program to ensure it runs as intended.	✓	✓	✓	✓
	35-AP-11 Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development	✓	✓	✓	✓
	35-AP-12 Describe choices made during program development using code comments, presentations, and demonstrations.	✓	✓	✓	✓
Impacts of Computing	35-IC-01 Compare computing technologies that have changed the world and how they both influence and are influenced by cultural practices.			✓	
	35-IC-02 Explore the tools that can be used to improve accessibility and usability of technology products for the diverse needs and wants of users.		✓		
	35-IC-03 Seek diverse perspectives with collaboration for the purpose of improving computational artifacts		✓		
	35-IC-04 Exhibit positive digital citizenship and social responsibility in online interactions.				
	35-IC-05 Utilize public domain or creative commons media, and refrain from copying or using material created by others without permission.				

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3-5 Computer Science

		3rd Grade					4th Grade								5th Grade							
		Materials Science: Properties of Matter (2)	Stability and Motion: Forces and Interactions	Stability and Motion: Science of Flight	The Changing Earth (2)	Programming Patterns	Energy Exploration	Waves and the Properties of Light	Organisms: Structure and Function	Input/Output: Human Brain	Environmental Changes (3)	Earth: Past, Present, and Future	Earth: Human Impact and Natural Disasters	Input/Output: Computer Systems	Matter: Properties and Reactions	Ecosystems: Flow of Matter and Energy	Earth's Water and Interconnected Systems	Patterns in the Universe	Robotics and Automation	Robotics and Automation: Challenge	Infection: Detection	Infection; Simulation and Modeling
Computing Systems	35-CS-01																					
	35-CS-02					✓								✓					✓			
	35-CS-03					✓								✓					✓			
Networks and the Internet	35-NI-01													✓								
	35-NI-02					✓								✓					✓			
Data & Analysis	35-DA-01																					
	35-DA-02																					
	35-DA-03			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓
	35-DA-04			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				
Algorithms & Programming	35-AP-01					✓								✓						✓		✓
	35-AP-02													✓								✓
	35-AP-03					✓								✓						✓		✓
	35-AP-04					✓								✓						✓		✓
	35-AP-05					✓								✓						✓		✓
	35-AP-06					✓								✓						✓		✓
	35-AP-07													✓					✓			✓
	35-AP-08					✓								✓						✓		✓
	35-AP-09													✓								✓
	35-AP-10					✓								✓						✓		✓
	35-AP-11					✓								✓						✓		✓
	35-AP-12					✓								✓						✓		✓
Impacts of Computing	35-IC-01																		✓	✓		
	35-IC-02													✓				✓				
	35-IC-03													✓				✓				
	35-IC-04																					
	35-IC-05											✓						✓				