

CRTC Computer Engineering - A-Year - Focus: AP Computer Science Principles

Number	Competency Name	Full Competency Text
NHPC.CompEng_1	Algorithms & Programming	Create meaningful and efficient programs including choosing which information to use and how to process and store it, breaking apart large problems into smaller ones, recombining existing solutions, and analyzing different solutions.
NHPC.CE_1a	Research, Planning, Flowcharting, Pseudocode	
NHPC.CE_1b	Decomposition (top/down design), commenting	
NHPC.CE_1c	Sequence, Selection, Iteration, Logic, & Debugging	
NHPC.CE_1d	Refactoring & Documentation (version control)	
NHPC.CompEng_2	Networks and the Internet	Apply networking concepts, using various models to implement protocols and standards when moving data. Design systems with working switching and routing "packets" to ensure data flows to the correct destination. Ensure data traffic flows through the internet effectively.
NHPC.CE_2a	Hardware of systems (client & server)	
NHPC.CE_2b	Information Architecture (Network & Internet)	
NHPC.CE_2c	OSI Model & Internet Protocols	
NHPC.CE_2d	Data Routing systems & servers	
NHPC.CompEng_3	Computing Systems	Apply concepts of physical components and software that make up a computing system, which communicate and process information in digital form, along with practices and methodology for troubleshooting issues in those systems.
NHPC.CE_3a	Hardware & Components (including peripheral)	
NHPC.CE_3b	Analog vs Digital, Compression, Processing, & Storage	
NHPC.CE_3c	Decimal, Binary, Hexadecimal, ASCII Conversions	
NHPC.CE_3d	Troubleshooting Hardware systems	
NHPC.CompEng_4	Data and Analysis	Synthesize concepts, practices and processes of data collection, resource management, and techniques to different types of data in order to discover useful information that can communicate storytelling and to inform decision-making.
NHPC.CE_4a	Research & Type Identification	
NHPC.CE_4b	Data Collection, Analysis & Querying Processes	
NHPC.CE_4c	Database Management for Digital Information	
NHPC.CE_4d	Modeling & Simulation	
NHPC.CompEng_5	Cybersecurity	Detect, prevent and mitigate threats in order to secure a computing system or network in an ethical manner, and in accordance with international, federal, state, local and cyber laws and regulations.
NHPC.CE_5a	Ethics	
NHPC.CE_5b	Detection, Prevention, Mitigation in Systems	
NHPC.CE_5c	Laws & Regulations (Chain of Custody)	
NHPC.CE_5d	Protecting Personal Identifiable Information	
CRTC.CompEng_6	Artificial Intelligence	Explore the significance of this emerging technology by understanding the foundational history while discussing it's impact, the ethical considerations of its use, the techniques for interacting with chatbots, and determining the validity of the information output.
CRTC.CE_6a	History & Evolution	
CRTC.CE_6b	Ethics	
CRTC.CE_6c	Prompt Engineering for information gathering	
CRTC.CE_6d	Impacts: Society, Economy, Culture	