

**Theory and Foundation**

**Overall Expectations**

- TFV.01E • describe how the internal components of the computer enable the peripherals to function
- TFV.02E • describe a problem-solving model such as the input, processing, output model
- TFV.03E • explain internal numbering and character representation systems
- TFV.04E • describe and illustrate the functions of logic gates
- TFV.05E • describe the fundamental programming constructs

**Computer Logic**

- TF1.01E – describe the relationship between the binary number system and computer logic
- TF1.02E – define a standard way of representing characters in binary code
- TF1.03E – describe the function of the fundamental logic gates, including the function of each pin: AND, NAND, OR, NOR, XOR, XNOR, and NOT

**Hardware, Interfaces, and Networking Systems**

- TF2.01E – use precise terminology in relation to all hardware, interfaces, and networking systems
- TF2.02E – identify the basic internal and external components of a computer
- TF2.03E – describe the primary function of each basic component
- TF2.04E – identify computer internals and peripheral devices and describe their relationship

**Programming Concepts**

- TF3.01E – define constants, variables, expressions, and assignment statements, including the order in which the operations are performed
- TF3.02E – describe how computers store and work with different types of data, including numbers and characters

**Skills and Processes**

**Overall Expectations**

- SPV.01E • connect and use correctly a variety of computer components and peripherals
- SPV.02E • demonstrate the use of an operating system, including a network
- SPV.03E • use logic gates to construct simple circuits
- SPV.04E • apply fundamental programming constructs to develop programs that interact with external components

**Computer Logic**

- SP1.01E – convert positive integer numbers to binary form
- SP1.02E – derive the truth tables of the fundamental logic gates
- SP1.03E – write Boolean equations for the fundamental logic gates

**Hardware, Interfaces, and Networking Systems**

- SP2.01E – set up a desktop computer system and install software
- SP2.02E – build an interface to connect the computer to a simple peripheral device
- SP2.03E – trace the operation of a system consisting of a program, an interface, hardware, and directories
- SP2.04E – use appropriate file management techniques
- SP2.05E – use correctly a variety of network system software
- SP2.06E – use Internet networking services correctly to access and navigate global information resources

**Programming Concepts**

- SP3.01E – use input and output statements in a program
- SP3.02E – use a decision structure and a repetition structure in a program

**SP3.03E** – design, write, and test a computer program to control a simple peripheral device

**Impact and Consequences**

**Overall Expectations**

**ICV.01E** • describe the evolution of computer electronics

**ICV.02E** • identify the social impact of computers and associated technologies

**ICV.03E** • identify related computer careers

**Specific Expectations**

**IC1.01E** – use appropriate strategies to avoid potential health and safety problems associated with computer use, such as posture problems, eye strain, and musculoskeletal injuries

**IC1.02E** – use safe practices in the handling of computer hardware and electronic components

**IC1.03E** – identify important scientific advances in computer electronic components

**IC1.04E** – describe the development of computer engineering technology and its impact

**IC1.05E** – describe careers related to computer engineering

**IC1.06E** – analyse the influences of computers on the engineering profession

**IC1.07E** – describe how computer engineering has evolved and how it has affected people’s security, safety, and privacy

**IC1.08E** – demonstrate understanding of the importance of ethical computer use

**IC1.09E** – demonstrate compliance with acceptable-use policies

**IC1.10E** – identify computer skills that are important to employers