

| Concept | Subconcept | Level 3A (Ages 14-16) | Course | Current Status |
|-------------------------|--------------------------------------|---|--------|-----------------|
| Computing Systems | Devices | 3A-CS-01 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. (P4.1 Developing and Using Abstractions; Extract common features from a set of interrelated processes or complex phenomena.) | FCCS | Already Meeting |
| Computing Systems | Hardware & Software | 3A-CS-02 Compare levels of abstraction and interactions between application software, system software, and hardware layers. (P4.1 Developing and Using Abstractions; Extract common features from a set of interrelated processes or complex phenomena.) | FCCS | Already Meeting |
| Computing Systems | Troubleshooting | 3A-CS-03 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. (P6.2 Testing and Refining Computational Artifacts; Identify and fix errors using a systematic process.) | | Unmet |
| Networks & The Internet | Network Communication & Organization | 3A-NI-04 Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing. (P4.1 Developing and Using Abstractions; Extract common features from a set of interrelated processes or complex phenomena.) | FCCS | Already Meeting |
| Networks & The Internet | Cybersecurity | 3A-NI-05 Give examples to illustrate how sensitive data can be affected by malware and other attacks. (P7.2 Communicating About Computing; Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.) | FCCS | Already Meeting |
| Networks & The Internet | Cybersecurity | 3A-NI-06 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. (P3.3 Evaluate whether it is appropriate and feasible to solve a problem computationally.) | FCCS | Already Meeting |
| Networks & The Internet | Cybersecurity | 3A-NI-07 Compare various security measures, considering tradeoffs between the usability and security of a computing system. (P6.3 Testing and Refining Computational Artifacts; Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.) | FCCS | Already Meeting |
| Networks & The Internet | Cybersecurity | 3A-NI-08 Explain tradeoffs when selecting and implementing cybersecurity recommendations. (P7.2 Communicating About Computing; Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.) | FCCS | Progressing |

| Concept | Subconcept | Level 3A (Ages 14-16) | Course | Current Status |
|--------------------------|---|--|---------|-----------------|
| Data & Analysis | Storage | 3A-DA-09 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images. (P4.1 Developing and Using Abstractions; Extract common features from a set of interrelated processes or complex phenomena.) | FCCS | Already Meeting |
| Data & Analysis | Storage | 3A-DA-10 Evaluate the tradeoffs in how data elements are organized and where data is stored. (P3.3 Evaluate whether it is appropriate and feasible to solve a problem computationally.) | FCCS | Already Meeting |
| Data & Analysis | Collection, Visualization, & Transformation | 3A-DA-11 Create interactive data visualizations using software tools to help others better understand real-world phenomena. (P4.4 Developing and Using Abstractions; Model phenomena and processes to simulate systems to understand and evaluate potential outcomes.) | | Unmet |
| Data & Analysis | Inference & Models | 3A-DA-12 Create computational models that represent the relationships among different elements of data collected from a phenomenon or process. (P4.4 Developing and Using Abstractions; Model phenomena and processes to simulate systems to understand and evaluate potential outcomes.) | FCCS | Progressing |
| Algorithms & Programming | Algorithms | 3A-AP-13 Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests. (P5.2 Creating Computational Artifacts; Create a computational artifact for practical intent, personal expression, or to address a societal issue.) | FOP | Already Meeting |
| Algorithms & Programming | Variables | 3A-AP-14 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables. (P4.1 Developing and Using Abstractions; Extract common features from a set of interrelated processes or complex phenomena.) | FOP/TLP | Already Meeting |
| Algorithms & Programming | Control | 3A-AP-15 Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. (P5.2 Creating Computational Artifacts; Create a computational artifact for practical intent, personal expression, or to address a societal issue.) | FOP/TLP | Already Meeting |
| Algorithms & Programming | Control | 3A-AP-15 Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. (P5.2 Creating Computational Artifacts; Create a computational artifact for practical intent, personal expression, or to address a societal issue.) | DSA | Already Meeting |

| Concept | Subconcept | Level 3A (Ages 14-16) | Course | Current Status |
|--------------------------|---------------------|--|---------|-----------------|
| Algorithms & Programming | Control | 3A-AP-16 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions. (P5.2 Creating Computational Artifacts; Create a computational artifact for practical intent, personal expression, or to address a societal issue.) | FOP | Already Meeting |
| Algorithms & Programming | Modularity | 3A-AP-17 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. (P3.2 Recognizing and Defining Computational Problems; Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.) | FOP/TLP | Already Meeting |
| Algorithms & Programming | Modularity | 3A-AP-18 Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. (P5.2 Creating Computational Artifacts; Create a computational artifact for practical intent, personal expression, or to address a societal issue.) | FOP | Progressing |
| Algorithms & Programming | Program Development | 3A-AP-19 Systematically design and develop programs for broad audiences by incorporating feedback from users. (P5.1 Creating Computational Artifacts; Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.) | FOP | Progressing |
| Algorithms & Programming | Program Development | 3A-AP-20 Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries. (P7.3 Communicating About Computing; Articulate ideas responsibly by observing intellectual property rights and giving appropriate attribution.) | | Unmet |
| Algorithms & Programming | Program Development | 3A-AP-21 Evaluate and refine computational artifacts to make them more usable and accessible. (P6.3 Testing and Refining Computational Artifacts; Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.) | | Unmet |
| Algorithms & Programming | Program Development | 3A-AP-22 Design and develop computational artifacts working in team roles using collaborative tools. (P2.4 Collaborating Around Computing; Evaluate and select technological tools that can be used to collaborate on a project.) | FOP | Already Meeting |

| Concept | Subconcept | Level 3A (Ages 14-16) | Course | Current Status |
|--------------------------|-----------------------|---|------------------|-----------------|
| Algorithms & Programming | Program Development | 3A-AP-23 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs. (P7.2 Communicating About Computing; Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.) | | Unmet |
| Impacts of Computing | Culture | 3A-IC-24 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. (P1.2 Fostering an Inclusive Computing Culture; Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.) | TLP | Progressing |
| Impacts of Computing | Culture | 3A-IC-25 Test and refine computational artifacts to reduce bias and equity deficits. (P1.2 Fostering an Inclusive Computing Culture; Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.) | Unassigned | Unmet |
| Impacts of Computing | Culture | 3A-IC-26 Demonstrate ways a given algorithm applies to problems across disciplines. (P3.1 Recognizing and Defining Computational Problems; Identify complex, interdisciplinary, real-world problems that can be solved computationally.) | FOP | Already Meeting |
| Impacts of Computing | Social Interactions | 3A-IC-27 Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields. (P2.4 Collaborating Around Computing; Evaluate and select technological tools that can be used to collaborate on a project.) | Across whole pro | Already Meeting |
| Impacts of Computing | Safety, Law, & Ethics | 3A-IC-28 Explain the beneficial and harmful effects that intellectual property laws can have on innovation. (P7.3 Communicating About Computing; Articulate ideas responsibly by observing intellectual property rights and giving appropriate attribution.) | FCCS | Progressing |
| Impacts of Computing | Safety, Law, & Ethics | 3A-IC-29 Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. (P7.2 Communicating About Computing; Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.) | FCCS | Already Meeting |
| Impacts of Computing | Safety, Law, & Ethics | 3A-IC-30 Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. (P7.3 Communicating About Computing; Articulate ideas responsibly by observing intellectual property rights and giving appropriate attribution.) | FCCS | Already Meeting |