INFORMATION TECHNOLOGY ACADEMY - STANDARDS CROSSWALK

CTE - NYS Standards: Career Development & Occupational Studies	Intro to IT	Computer HSS	Computer Programming	Advanced Computers/Digital Media Design
NYS - Commencement Level CDOS Standards	**Standard 1: Career Development :** *Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.* **Standard 2: Integrated Learning:** *Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings* **Standard 3a: Universal Foundation Skills:** *Students will demonstrate mastery of the foundation skills and competencies essential for success in the Workplace* ❖ **Basic Skills**: *Basic skills include the ability to read, write, listen, and speak as well as perform arithmetic and mathematical functions.* ❖ **Thinking Skills**: *Thinking skills lead to problem solving, experimenting, and focused observation and allow the application of knowledge to new and unfamiliar situations* ❖ **Personal Qualities**: *Personal qualities generally include competence in self management and the ability to plan, organize, and take independent action* ❖ **Interpersonal Skills**: *Positive interpersonal qualities lead to teamwork and cooperation in large and small groups in family, social, and work situations.* ❖ **Technology:** *Technology is the process and product of human skill and ingenuity in designing and creating things from available resources to satisfy personal and societal needs and wants.* ❖ **Managing Information:** *Information management focuses on the ability to access and use information obtained from other people, community resources, and computer networks* ❖ **Managing Resources Systems**: *Using resources includes the application of financial and human factors, and the elements of time and materials to successfully carry out a planned activity* ❖ **Systems:** *Systems skills include the understanding of and ability to work within natural and constructed systems.* **Standard 3b: Career Majors:** *Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsec-ondary programs.*			

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NYS - Commencement Level CDOS Standards	Advanced CTE Common Career Technical Core Standards	Next-Gen Computer Science	Next-Gen ELA	Next-Gen HS Literacy	Next-Gen Math
Commencement Standard 3a: Universal Foundation Skills *Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.*	**ITC01 ACADEMIC FOUNDATIONS:** *Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster*				
3a-PI Basic Skills: *Students use a combination of techniques to read or listen to complex information and analyze what they hear or read; convey information confidently and coherently in written or oral form*	**ITC02 COMMUNICATIONS:** *Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology and information importance to the organization.*		**W2:** *Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.* **SL1:** *Initiate and participate effectively in a range of collaborative discussions with diverse partners on complex topics, texts, and issues; express ideas clearly and persuasively, and build on those of others.*	**WHST2**: *Write informative/explanatory text focused on discipline-specific content*	
3a-PI THINKING SKILLS *Performance Indicator 1: Students demonstrate the ability to organize and process information and apply skills in new ways.*	**ITC03 PROBLEM-SOLVING AND CRITICAL THINKING:** *Solve problems using critical thinking skills (analyze, synthesize, and evaluate) independently and in teams. Solve problems using creativity and innovation.*		**SL4**: *Present claims, findings, and supporting evidence clearly, concisely, and logically; organization, development, substance, and style are appropriate to task, purpose, and audience.*		**Mathematical Practices:** *1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others.*

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NYS - Commencement Level CDOS Standards	Advanced CTE Common Career Technical Core Standards	Next-Gen Computer Science	Next-Gen ELA	Next-Gen HS Literacy	Next-Gen Math
3a-PI MANAGING INFORMATION *Performance Indicator 1: Students use technology to acquire, organize, and communicate information by entering, modifying, retrieving, and storing data.* **3a-PI TECHNOLOGY** *Students apply knowledge of technology to identify and solve problems.Use the computer as a tool for word processing, graphics Gathering, organizing,manipulating data and information , and presentations*	**ITC04 IT APPLICATIONS:** *Use information technology tools specific to the career cluster to access, manage, integrate, and create information.*	**9-12.DL.4** *Independently select advanced digital tools and resources to create, revise, and publish complex digital artifacts or collection of artifacts.*	**SL5:** *Make strategic use of digital media and/or visual displays in presentations to enhance understanding of findings, reasoning, and evidence, and to add elements of interest to engage the audience.* **SL2:** *Integrate multiple sources of information presented in diverse formats (e.g., including visual, quantitative, and oral)*	**WHST6***: Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question and the accuracy of each source by applying discipline-specific criteria; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.*	
3a-PI MANAGING RESOURCES *Students allocate resources to complete a task.*	**ITC05.03** *Employ project management knowledge to oversee IT projects.*	**9-12.DL.5** *Transfer knowledge of technology in order to use new and emerging technologies on multiple platforms.*			**Mathematical Practices** *5. Use appropriate tools strategically.*
3a-P1 SYSTEMS: *Students demonstrate an understanding of how systems performance relates to the goals, resources, and functions in an organization*	**ITC05 SYSTEMS**: *Understand roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.*	**9-12.NSD.2** *Explain the levels of interaction existing between the application software, system software, and hardware of a computing system.*	**SL1b:** *Work with peers to set norms for collegial discussions and decision-making, establish clear goals, deadlines, and individual roles as needed.*		

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MATH IN IT	Intro to IT	Computer HSS	Computer Programming
Next-Gen Math	**AI-F. IF Functions Interpreting Functions** **4. For a function that models a relationship between two quantities:** *i) interpret key features of graphs and tables in terms of the quantities; and* *ii) sketch graphs showing key features given a verbal description of the relationship.* *(Shared standard with Algebra II)*		
	AI-F.BF Functions Building Functions *1. Write a function that describes a relationship between two quantities. ★(Shared standard with Algebra II)*		
		AII-A.SSE Algebra Seeing Structure in Expressions *c. Use the properties of exponents to rewrite exponential expressions. (Shared standard with Algebra I)*	**GEO-G.CO Geometry Congruence** **Make geometric constructions.** *12. Make, justify, and apply formal geometric constructions* **GEO-G.C Geometry Circles** *2a. Identify, describe and apply relationships between the angles and their intercepted arcs of a circle* *2b. Identify, describe and apply relationships among radii, chords, tangents, and secants of a circle.* **Find arc lengths and area of sectors of circles.** *5. Using proportionality, find one of the following given two others; the central angle, arc length, radius or area of sector.* **AII-S.CP Statistics and Probability** **Conditional Probability and the Rules of Probability** *1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").*

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CTE - NYS Standards: Career Development & Occupational Studies	Intro to IT	Computer HSS	Computer Programming	Advanced Computers/Digital Media Design
Next-Gen Computer Science	**9-12.IC.1** *Evaluate the impact of computing technologies on equity, access, and influence in a global society.* **9-12.IC.2** *Debate laws and regulations that impact the development and use of computing technologies and digital Information* **9-12.IC.3** *Debate issues of ethics related to real world computing technologies.* **9-12.IC.4** *Assess personal and societal tradeoffs related to computing technologies and data privacy.* **9-12.IC.7** *Investigate the use of computer science in multiple fields.* **9-12.CT.4** *Implement a program using a combination of student-defined and third-party functions to organize the Computation.* **9-12.NSD.5** *Describe how emerging technologies are impacting networks and how they are used.*	**9-12.NSD.2** *Explain the levels of interaction existing between the application software, system software, and hardware of a computing system.* **9-12.NSD.3** *Develop and communicate multi-step troubleshooting strategies others can use to identify and fix problems with computing devices and their components.* **9-12.NSD.4** *Describe the components and design characteristics that allow data and information to be moved, stored and referenced over the Internet.* **9-12.NSD.5** *Describe how emerging technologies are impacting networks and how they are used.* **9-12.DL.7** *Design and implement strategies that support safety and security of digital information, personal identity, property, and physical and mental health when operating in the digital world.*	**9-12.CT.1** *Create a simple digital model that makes predictions of outcomes.* **9-12.CT.4** *Implement a program using a combination of student-defined and third-party functions to organize the Computation.* **9-12.CT.5** *Modify a function or procedure in a program to perform its computation in a different way over the same inputs, while preserving the result of the overall program.* **9-12.CT.7***Design or remix a program that utilizes a data structure to maintain changes to related pieces of data.* **9-12.CT.8** *Develop a program that effectively uses control structures in order to create a computer program for practical intent, personal expression, or to address a societal issue.* **9-12.CT.9** *Systematically test and refine programs using a range of test cases, based on anticipating common errors and user behavior.*	**9-12.NSD.4** *Describe the components and design characteristics that allow data and information to be moved, stored and referenced over the Internet.*
	9-12.CT.2 *Collect and evaluate data from multiple sources for use in a computational artifact.* **9-12.CT.10** *Collaboratively design and develop a program or computational artifact for a specific audience and create documentation outlining implementation features to inform collaborators and users.* **9-12.CY.1** *Determine the types of personal and organizational information and digital resources that an individual may have access to that needs to be protected.* **9-12.CY.2** *Describe physical, digital, and behavioral safeguards that can be employed to protect the confidentiality, integrity, and accessibility of information.* **9-12.DL.1** *Type proficiently on a keyboard.* **9-12.DL.2** *Communicate and work collaboratively with others using digital tools to support individual learning and contribute to the learning of others.* **9-12.DL.4** *Independently select advanced digital tools and resources to create, revise, and publish complex digital artifacts or collection of artifacts.*			

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	9-12.DL.5 *Transfer knowledge of technology in order to use new and emerging technologies on multiple platforms.*

INDUSTRY STANDARDS	Intro to IT	Computer HSS	Computer Programming	Advanced Computers/Digital Media Design
Advanced CTE Common Career Technical Core Standards	**ITC09.01** *Identify and explain the implications IT has on business transformation and development to demonstrate an understanding of the impact on business.* **ESS04.11** *Use computer-based equipment (containing embedded computers or processors) to control devices.* **ESS09.07** *Identify and explore career opportunities in one or more career pathways to build an understanding of the opportunities available in the cluster.* **ITC08.01.02** *Summarize the rights and responsibilities of IT workers.* **ITC08.01.03** *Identify ethical issues common to the IT field* **ITC10.01.02** *Explain the role of number systems in information systems.* **ITC10.01.03** *Identify computer classifications* **ITC10.01.04** *Describe elements and types of information processing cycle (i.e., input, process, output, and storage).*	**ITC10.01** *Demonstrate knowledge of the hardware components associated with information systems.* **ITC10.01.02** *Explain the role of number systems in information systems.* **ITC10.02***Compare classes of software associated with the development and maintenance information systems to develop software and maintain computer systems.* **ITC10.02.01** *Explain the key functions and applications of software* **ITC10.04.01** *Explain data communications procedures, equipment and media* **ITC10.05** *Demonstrate technical knowledge of the Internet to develop and maintain IT systems* **ITC10.06** *Access and use Internet services when completing IT related tasks to service and update IT systems.* **ITC10.07** *Install and configure software programs to maintain and update IT systems.* **ITC10.09** *Employ IT knowledge and procedures when configuring or modifying an operating system to ensure optimal system functioning.*	**ITC10.02***Compare classes of software associated with the development and maintenance information systems to develop software and maintain computer systems.* **ITC10.02.02** *Describe the range of languages used in software development.* **ITPD01.04.01** *Employ tools in developing software applications.* **ITPD01.04.02** *Apply language specific programming tools/techniques.* **ITPD01.06** *Produce (code) a computer application to demonstrate proficiency in developing an application using the appropriate programming language.* **ITPD01.06.01** *Explain programming language concepts.* **ITPD01.06.04** *Summarize program development methodology* **ITPD01.07.02** *Perform testing and validation*	**ITC10.08** *Demonstrate knowledge of Web page basics to build an understanding of Web page design and functioning.* **ESS04.05** *Operate writing and publishing applications to prepare business Communications.* **ESS04.06** *Operate presentation applications to prepare presentations.* **ESS04.07** *Employ spreadsheet applications to organize and manipulate data.* **ESS04.08** *Employ database applications to manage data.* **ITC10.05.01** Describe Internet protocols. **ITPC01.02** *Participate in a user focused design and development process to produce Web and digital communications solutions.* **ITPC01.03.02** *Create product visual design* **ITPC01.04** *Gather and analyze digital communication customer requirements to best meet consumer needs.*

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	ITC10.03.02 *Identify new IT technologies* **ITC10.03.03** *Assess the potential importance and impact of new IT technologies in the Future.*	**ITC10.10** *Perform standard computer backup procedures to protect IT information* **ITC10.12.02** *Ensure that system is functioning optimally.* **ITC10.12.03** *Fix and document system problems* **ITC10.12.04** *Configure systems to provide optimal system interfaces* **ESS04.11** *Use computer-based equipment (containing embedded computers or processors) to control devices.* **ITC02.01.02** *Demonstrate ability to assist customers in a professional manner.* **ITC10.04.01** *Explain data communications procedures, equipment and media* **ITC10.04.03** *Explain the differences between local and wide area networks* **ITPA01.03.01** *Demonstrate knowledge of the basics of network architecture* **ITPA01.03.02** *Demonstrate knowledge of basic network classifications and topologies* **ITPA01.03.05** *Characterize network connectivity basis and transmission line applications* **ITPA01.03.09** *Characterize the use of Network Operating Systems* **ITPA01.06.03** *Apply software upgrades, service packs and patches.* **ITPA01.06.07 T***roubleshoot data communications. Isolate system faults in various types of networks, cables, data modems, and carrier systems.*		**ITPC01.06** *Prepare digital communication product specifications to communicate specifications with various audiences.* **ITPC01.08.0***3 Use basic Web development skills.* **ITPD01.10.02** *Create, populate, and maintain a database* **ITPC01.13** *Consider intellectual property issues when creating Web pages*

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	ITC07 LEADERSHIP AND TEAMWORK: *Use leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.* **ITC08 ETHICS AND LEGAL RESPONSIBILITIES**: *Know and understand the importance of professional ethics and legal responsibilities* **ITC10 TECHNICAL SKILLS:** *Use the technical knowledge and skills required to pursue the targeted careers for all pathways in the career cluster, including knowledge of design, operation, and maintenance of technological systems critical to the career cluster.* **ITC10.02.04** *Explain new and emerging classes of software.* **ITC10.03** *Identify and compare new IT trends and technologies to build an understanding of their potential influence on IT practices.* **ESS04.03** *Operate electronic mail applications to communicate within a workplace.* **ESS04.04** *Operate Internet applications to perform workplace tasks.* **ESS06.01** *improvement in performance and compliance. Implement personal and jobsite safety rules and regulations to maintain safe and healthful working conditions and environments.* **ESS09.10.01** *Examine licensing, certification and credentialing requirements at the national, state and local levels to maintain compliance with industry requirements*