Georgia CTAE

Computer Science Principles (2013)

Demonstrate employability skills required by business and industry.	**1** Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities. IT-CSP 1.1
	2 Demonstrate creativity by asking challenging questions and applying innovative procedures and methods. IT-CSP 1.2
	3 Exhibit critical thinking and problem solving skills to locate, analyze and apply information in career planning and employment situations. IT-CSP 1.3
	4 Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity. IT-CSP 1.4
	5 Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team work skills. IT-CSP 1.5
	6 1.6 Present a professional image through appearance, behavior and language. IT-CSP 1.6
Create digital artifacts that foster creative expression including programs, digital music, videos, images, documents, and combinations of these such as infographics, presentations, and web pages IT-CSP 2	**1** Understand and use software tools by combining and modifying existing artifacts or by creating new artifacts. IT-CSP 2.1
	2 Collaborate as a team to develop an artifact that represents multiple perspectives. IT-CSP 2.2
	3 Show functionality and suitability (or appropriateness) of a computational artifact. IT-CSP 2.3
	4 Develop a program for creative expression or to satisfy personal curiosity which may have visual, audible, or tactile results. IT-CSP 2.4
	5 Develop a program specifically with the goal of solving a problem, creating new knowledge, or helping people, organizations, or society IT-CSP 2.5
	6 Use computing tools and techniques for creative expression. IT-CSP 2.6

Apply abstractions in digital data to explain how bits are grouped to represent higher-level abstractions such as numbers and characters IT-CSP 3	1 **Model how a combination of abstractions built upon binary sequences can be used to represent all digital data.** IT-CSP 3.1
	2 **Understand levels of all digital data representation (i.e. lowest is bits).** IT-CSP 3.2
	3 **Show multiple levels of abstraction used in computation.** IT-CSP 3.3
	4 **Describe how software is built using low and high level abstractions.** IT-CSP 3.4
	5 **Explain how binary data is processed using physical layers of computing hardware, including gates, chips, and components** IT-CSP 3.5
	6 **Compare and contrast past, current, and trending programming languages, from low to high levels, used in developing software.** IT-CSP 3.6
	7 **Understand how models and simulations use abstraction to raise and answer questions.** IT-CSP 3.7
	8 **Provide examples and explanations of how society uses models and simulations to generate new understanding of knowledge.** IT-CSP 3.8
	9 **Demonstrate skills and knowledge that models use different levels of abstraction to represent phenomena.** IT-CSP 3.9
Design and create computer programs to process and extract information to gain insight and knowledge. IT-CSP 4	1 **Collaborate to develop hypotheses and questions, and testing hypotheses to answer questions about data to gain insight and knowledge** IT-CSP 4.1
	2 **Present insight and knowledge gained from data using visualizations, notation and precise language.** IT-CSP 4.2
	3 **Write a scientific report modeling a written research paper on big data applications.** IT-CSP 4.3
	4 **Define use of scalability of systems and analytical approaches as they are used in large data sets** IT-CSP 4.4
	5 **Use computing tools to discover a connection in information by computing facilitates.** IT-CSP 4.5
	6 **Explain how computational manipulations of information require consideration of representation, storage, security, and transmission.** IT-CS 4.6
	7 **Debate the trade-offs in representing information as digital data.** IT-CSP 4.7
	8 **Justify the format of data storage based upon the principles of many formats of storage, size, and intended use of manipulated computationally.** IT-CSP 4.8
Develop, express, implement, and analyze algorithms analytically	1 **Develop an algorithm designed to be implemented to run on a computer.** IT-CSP 5.1

and empirically. IT-CSP 5	**2** **Explain the building blocks of algorithms: sequencing, selection, iteration, and recursion.** IT-CSP 5.2
	3 **Express an algorithm in a language.** IT-CSP 5.3
	4 **Describe the purpose and output variances of each type of language including natural language, pseudo code, and visual and textual programming languages.** IT-CSP 5.4
	5 **Connect problems to potential algorithmic solutions and explain an example of problems that cannot be solved using algorithms** IT-CSP 5.
	6 **Evaluate algorithms analytically and empirically.** IT-CSP 5.6
Create programs that translate human intention into computational artifacts including music, images, visualizations, and more while exploring the concepts, techniques and development used in writing programs. IT-CSP 6	**1** **Explain how programs implement algorithms.** IT-CSP 6.1
	2 **Use abstraction to manage complexity in programs.** IT-CSP 6.2
	3 **Evaluate a program for correctness i.e. program style affecting the determination of program correctness.** IT-CSP 6.3
	4 **Locate and correct errors in a program.** IT-CSP 6.4
	5 **Justify and explain a program's correctness.** IT-CSP 6.5
	6 **Develop a correct program.** IT-CSP 6.6
	7 **Collaborate to solve a problem using programming.** IT-CSP 6.7
Gain insight into the operation of the Internet, study characteristics of the Internet and systems built upon it, and analyze important concerns, such as cybersecurity. IT-CSP 7	**1** **Explain the abstractions in the Internet and how the Internet functions.** IT-CSP 7.1
	2 **Explain characteristics of the Internet and the systems built on it.** IT-CSP 7.2
	3 **Analyze how characteristics of the Internet and the systems built on it influence use.** IT-CSP 7.3
	4 **Connect the concern of cybersecurity with the Internet and the systems built on it.** IT-CSP 7.4
Develop a logical argument from the many ways in which computing enables innovation and our methods for communicating, collaborating, problem solving, and doing	**1** **Analyze how computing affects communication, interaction, and cognition.** IT-CSP 8.1
	2 **Collaborate as part of a process that scales.** IT-CSP 8.2
	3 **Connect computing with innovations in other fields.** IT-CSP 8.3
	4 **Analyze the beneficial and harmful effects of computing.** IT-CSP 8.4

business, and analyze the potential benefits and harmful effects of computing in a the way people think, work, live, and play. 8.1 8.2 8.3 8.4 . 8.5 IT-CSP 8	**5** **Connect computing within economic, social, and cultural contexts.** IT-CSP 8.5
Explore how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, entrepreneurship development, and competitive events. IT-CSP 9	**1** **Explain the goals, mission and objectives of Future Business Leaders of America.** IT-CSP 9.1
	2 **Explore the impact and opportunities a student organization (FBLA) can develop to bring business and education together in a positive working relationship through innovative leadership and career development programs.** IT-CSP 9.2
	3 **Explore the local, state, and national opportunities available to students through participation in related student organization (FBLA) including but not limited to conferences, competitions, community service, philanthropy, and other FBLA activities.** IT-CSP 9.3
	4 **Explain how participation in career and technology education student organizations can promote lifelong responsibility for community service and professional development.** IT-CSP 9.4
	5 **Explore the competitive events related to the content of this course and the required competencies, skills, and knowledge for each related event for individual, team, and chapter competitions.** IT-CSP 9.5