Illinois Computer Science

Grades 11-12

Computing Systems	1	Devices: Compare the characteristics and uses of traditional and emerging computing devices and systems. 11-12.CS.01
	2	Hardware and Software: Categorize the roles of operating system software. 11-12.CS.02
	3	Troubleshooting: Illustrate ways computing systems implement logic, input, and output through hardware components. 11-12.CS.03
Networks and the Internet	4	Network Communication and Organization: Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology). 11-12.NI.04
	5	Cybersecurity: Compare ways software developers protect devices and information from unauthorized access. 11-12.NI.05
Data and Analysis	6	Collection, Visualization, and Transformation: Use data analysis tools and techniques to identify patterns in data representing complex systems. 11-12.DA.06
	7	Collection, Visualization, and Transformation: Select data collection tools and techniques to generate data sets that support a claim or communicate information. 11-12.DA.07
	8	Collection, Visualization, and Transformation: Analyze the ways in which automated data collection is utilized in society. 11-12.DA.08
	9	Interference and Models: Evaluate the ability of models and simulations to test and support the refinement of hypotheses. 11-12.DA.09
Algorithms and Programming	10	Algorithms: Describe how artificial intelligence drives many software and physical systems. 11-12.AP.10
	11	Algorithms: Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem. 11-12.AP.11
	12	Algorithms: Use and adapt classic algorithms to solve computational problems. 11-12.AP.12
	13	Algorithms: Evaluate algorithms in terms of their efficiency, correctness, and clarity. 11-12.AP.13

	14	**Variables: Compare and contrast fundamental data structures and their uses.** 11-12.AP.14
	15	**Control: Illustrate the flow of execution of a recursive algorithm.** 11-12.AP.15
	16	**Modularity: Construct solutions to problems using student-created components, such as procedures, modules, or objects.** 11-12.AP.16
	17	**Modularity: Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution.** 11-12.AP.17
	18	**Modularity: Demonstrate code reuse by creating programming solutions using libraries and application programming interfaces.** 11-12.AP.18
	19	**Program Development: Plan and develop programs for broad audiences using a software life cycle process.** 11-12.AP.19
	20	**Program Development: Demonstrate conversion of source code into machine code using compliers or interpreters.** 11-12.AP.20
	21	**Program Development: Explain security issues that might lead to compromised computer programs.** 11-12.AP.21
	22	**Program Development: Develop programs for multiple computing platforms.** 11-12.AP.22
	23	**Program Development: Use version control systems, integrated development environments, and collaborative tools and practices (code documentation) in a group software project.** 11-12.AP.23
	24	**Program Development: Develop and use a series of test cases to verify that a program performs according to its design specifications.** 11-12.AP.24
	25	**Program Development: Discuss social, economic, and ethical consequences of malfunctional software and software updates.** 11-12.AP.25
	26	**Program Development: Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).** 11-12.AP.26
	27	**Program Development: Evaluate key qualities of a program through a process such as a code review.** 11-12.AP.27
	28	**Program Development: Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems.** 11-12.AP.28
Impacts of Computing	29	**Culture: Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.** 11-12.IC.29

	30 **Culture: Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society.** `11-12.IC.30`
	31 **Culture: Predict how computational innovations that have revolutionized aspects of our culture might evolve.** `11-12.IC.31`
	32 **Safety Law and Ethics: Debate laws and regulations that impact the development and use of software.** `11-12.IC.32`
Emerging and Future Technologies	**A** **Explain that the field of emerging technologies will be evolving and rapidly growing.** `11-12.ET.A`
	B **Compare existing and emerging technologies, ideas, and concepts.** `11-12.ET.B`
	C **Describe how emerging technologies are influencing current events at a local and global scale.** `11-12.ET.C`
	D **Predict the positive and negative societal, cultural, and economic impacts that emerging and future technologies may generate.** `11-12.ET.D`
	E **Create new or original work by applying emerging technologies.** `11-12.ET.E`