Illinois Computer Science

Grades 9-10

Computing Systems	1	Devices: Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. 9-10.CS.01
	2	Hardware and Software: Compare levels of abstraction and interactions between application software, system software, and hardware layers. 9-10.CS.02
	3	Troubleshooting: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. 9-10.CS.03
Networks and the Internet	4	Network Communication and Organization: Evaluate the scalability and reliability of networks by describing the relationship between routers, switches, servers, topology, and addressing. 9-10.NI.04
	5	Network Communication and Organization: Give examples to illustrate how sensitive data can be affected by malware and other attacks. 9-10.NI.05
	6	Network Communication and Organization: Compare various security measures, considering tradeoffs between the usability and security of a computing system. 9-10.NI.06
	7	Cybersecurity: Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. 9-10.NI.07
	8	Cybersecurity: Explain tradeoffs when selecting and implementing cybersecurity recommendations. 9-10.NI.08
Data and Analysis	9	Storage: Translate between different bit representations of real-world phenomena, such as characters, numbers, and images. 9-10.DA.09
	10	Storage: Evaluate the tradeoffs in how data elements are organized and stored. 9-10.DA.10
	11	Collection, Visualization, and Transformation: Create interactive data visualizations using software tools to help others better understand real-world phenomena. 9-10.DA.11
	12	Interference and Models: Create computational models that represent the relationships among different elements of data collected from a phenomenon or process. 9-10.DA.12

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Algorithms and Programming	13	**Algorithms: Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.** 9-10.AP.13
	14	**Variables: Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.** 9-10.AP.14
	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.** 9-10.AP.15
	16	**Control: Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.** 9-10.AP.16
	17	**Control: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, or objects.** 9-10.AP.17
	18	**Modularity: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.** 9-10.AP.18
	19	**Modularity: Systematically design and develop programs for broad audiences by incorporating feedback from users.** 9-10.AP.19
	20	**Program Development: Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries.** 9-10.AP.20
	21	**Program Development: Evaluate and refine computational artifacts to make them more usable and accessible.** 9-10.AP.21
	22	**Program Development: Design and develop computational artifacts working in team roles using collaborative tools.** 9-10.AP.22
	23	**Program Development: Document design decisions using text, graphics, presentations, or demonstrations in the development of complex programs.** 9-10.AP.23
	24	**Program Development: Describe the characteristics and evaluate the impact of human computer interaction.** 9-10.AP.24
Impacts of Computing	25	**Culture: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. Evaluate the ways digital social interactions impact personal, ethical, social, economic, and cultural practices.** 9-10.IC.25
	26	**Culture: Test and refine computational artifacts to reduce bias and equity deficits.** 9-10.IC.26
		Culture: Demonstrate ways a given algorithm applies to problems across disciplines. 9-10.IC.27

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	28 Social Interactions: Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields. 9-10.IC.28
	29 Safety Law and Ethics: Explain the beneficial and harmful effects that intellectual property laws can have on innovation. 9-10.IC.29
	30 Safety Law and Ethics: Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. 9-10.IC.30
	31 Safety Law and Ethics: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. 9-10.IC.31
Emerging and Future Technologies	**A** Explain that the field of emerging technologies will be evolving and rapidly growing. 9-10.ET.A
	B Compare existing and emerging technologies, ideas, and concepts. 9-10.ET.B
	C Describe how emerging technologies are influencing current events at a local and global scale. 9-10.ET.C
	D Predict the positive and negative societal, cultural, and economic impacts that emerging and future technologies may generate. 9-10.ET.D
	E Create new or original work by applying emerging technologies. 9-10.ET.E