Nevada Computer Science

Computer Science: Grades 9-12

Algorithms and Programming

1 Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests. 9-12.AP.A.1

2 Demonstrate the use of both linked lists and arrays to simplify solutions, generalizing computational problems instead of repeatedly using simple variables. 9-12.AP.V.1

3 Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. 9-12.AP.C.1

4 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions. 9-12.AP.C.2

5 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. 9-12.AP.M.1

6 Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. 9-12.AP.M.2

7 Systematically design and develop programs for broad audiences by incorporating feedback from users. 9-12.AP.PD.1

8 Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries. 9-12.AP.PD.2

9 Evaluate and refine computational artifacts to make them more usable by all and accessible to people with disabilities. 9-12.AP.PD.3

10 Design and develop computational artifacts working in team roles using collaborative tools. 9-12.AP.PD.4

11 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs. 9-12.AP.PD.5

Computing Systems

1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. 9-12.CS.D.1

	2	**Compare levels of abstraction and interactions between application software, system software, and hardware layers.** 9-12.CS.HS.1
	3	**Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.** 9-12.CS.T.1
Data and Analysis	1	**Translate between different bit representations of real-world phenomena, such as characters, numbers, and images (e.g., convert hexadecimal colors to decimal percentages, ASCII/Unicode representation).** 9-12.DA.S.1
	2	**Evaluate the tradeoffs in how data elements are organized and where data is stored.** 9-12.DA.S.2
	3	**Create interactive data visualizations or alternative representations using software tools to help others better understand real-world phenomena.** 9-12.DA.CVT.1
	4	**Create computational models that represent the relationships among different elements of data collected from a phenomenon, process, or model.** 9-12.DA.IM.1
Impacts of Computing	1	**Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.** 9-12.IC.C.1
	2	**Test and refine computational artifacts to reduce bias and equity deficits.** 9-12.IC.C.2
	3	**Demonstrate ways a given algorithm applies to problems across disciplines.** 9-12.IC.C.3
	4	**Explain the potential impacts of artificial intelligence on society.** 9-12.IC.C.4
	5	**Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.** 9-12.IC.SI.1
	6	**Explain the beneficial and harmful effects that intellectual property laws can have on innovation.** 9-12.IC.SLE.1
	7	**Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users.** 9-12.IC.SLE.2
	8	**Evaluate the social and economic implications of privacy in the context of safety, law, or ethics.** 9-12.IC.SLE.3
Networks and the Internet	1	**Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.** 9-12.NI.NCO.1
	2	**Give examples to illustrate how sensitive data can be affected by malware and other attacks.** 9-12.NI.C.1

3 **Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.** `9-12.NI.C.2`

4 **Compare various security measures, considering tradeoffs between the usability and security of a computing system.** `9-12.NI.C.3`

5 **Explain tradeoffs when selecting and implementing cybersecurity recommendations.** `9-12.NI.C.4`