

Student Learning Outcomes Analysis

Subject

Computer Science

Grade

SLOs for Assessment Key:

1. Ambiguous assessable in Summative - (Grey) 2. Not assessable in Summative - (Grey) 3.
 Repetitive (with in same grade) - (Grey) 4.
 Repetitive (with in same learning level) - (Grey)

S #	Domains	Standards	Benchmarks	Topic/ Title	NCP-SLO No.	NCP (2022)-SLOs description	Status of SLOs	SLOs for Assessment	Cognitive Domain
1	Domain A: Computer Systems	Students will learn about components and interactions between computer systems, stages of software development, data representation and transmission across networks of computing systems, and the implications on usability, reliability, security, etc	Benchmark I: Students will identify and analyze components of computer systems and different levels of interactions between hardware, software, users, and computer networks		SLO CS-10-A-01	Students will be able to understand and describe number systems and encoding schemes for data representation in computer systems	Matched SLO		Understand
2	Domain A: Computer Systems	Students will learn about components and interactions between computer systems, stages of software development, data representation and transmission across networks of computing systems, and the implications on usability, reliability, security, etc	Benchmark I: Students will identify and analyze components of computer systems and different levels of interactions between hardware, software, users, and computer networks		SLO CS-10-A-02	Students will be able to explain how system software controls the flow of information between hardware components used for input, output, storage, and processing	Matched SLO		Understand
3	Domain A: Computer Systems	Students will learn about components and interactions between computer systems, stages of software development, data representation and transmission across networks of computing systems, and the implications on usability, reliability, security, etc	Benchmark I: Students will identify and analyze components of computer systems and different levels of interactions between hardware, software, users, and computer networks		SLO CS-10-A-03	Students will identify and learn common software tools such as translators, integrated development environments, online and offline computing platforms, code repositories, etc.	Matched SLO	Not assessable in summative	Understand
4	Domain B: Computational Thinking & Algorithms	Students will identify and decompose simple and complex problems, create & evaluate appropriate solutions using computational approaches, and understand and apply common algorithms used in solving computational problems	Benchmark I: Students will understand and apply computational thinking techniques to solve complex, real-world problems.		SLO CS-10-B-01	Students will identify common algorithms used to develop software, store, search, or sort information	Matched SLO		Understand
5	Domain B: Computational Thinking & Algorithms	Students will identify and decompose simple and complex problems, create & evaluate appropriate solutions using computational approaches, and understand and apply common algorithms used in solving computational problems	Benchmark I: Students will understand and apply computational thinking techniques to solve complex, real-world problems.		SLO CS-10-B-02	Develop and apply abstractions to create generalized, modular solutions	Matched SLO		Apply
6	Domain C: Programming Fundamentals	Students will create and debug projects in programming languages Python, HTML, and JavaScript, learning how to translate algorithms into code and define & apply fundamental programming constructs such as sequence, selection, and iteration	Benchmark I: Students will develop, test, and debug static website (using HTML and CSS) and a dynamic website (using JavaScript)		SLO CS-10-C-01	Students should be able to differentiate between front-end development, and back-end development of a website	Matched SLO		Understand
7	Domain C: Programming Fundamentals	Students will create and debug projects in programming languages Python, HTML, and JavaScript, learning how to translate algorithms into code and define & apply fundamental programming constructs such as sequence, selection, and iteration	Benchmark I: Students will develop, test, and debug static website (using HTML and CSS) and a dynamic website (using JavaScript)		SLO CS-10-C-02	Students should be able to use more advanced HTML/CSS features in an appropriate environment	Matched SLO		Apply
8	Domain C: Programming Fundamentals	Students will create and debug projects in programming languages Python, HTML, and JavaScript, learning how to translate algorithms into code and define & apply fundamental programming constructs such as sequence, selection, and iteration	Benchmark I: Students will develop, test, and debug static website (using HTML and CSS) and a dynamic website (using JavaScript)		SLO CS-10-C-03	Students should be able to use more advanced programming constructs (lists, etc.) to create dynamic websites using JavaScript as backend scripting	Matched SLO		Apply
9	Domain C: Programming Fundamentals	Students will create and debug projects in programming languages Python, HTML, and JavaScript, learning how to translate algorithms into code and define & apply fundamental programming constructs such as sequence, selection, and iteration	Benchmark I: Students will develop, test, and debug static website (using HTML and CSS) and a dynamic website (using JavaScript)		SLO CS-10-C-04	Students should be able to implement complex algorithms that use more complex data structures (lists, etc.) in JavaScript	Matched SLO		Apply

10	Domain C: Programming Fundamentals	Students will create and debug projects in programming languages Python, HTML, and JavaScript, learning how to translate algorithms into code and define & apply fundamental programming constructs such as sequence, selection, and iteration	Benchmark I: Students will develop, test, and debug static website (using HTML and CSS) and a dynamic website (using JavaScript)	SLO CS-10-C-05	Students will determine more advanced techniques (unit tests, breakpoints, watches) for testing and debugging their code in JavaScript	Matched SLO	Not assessable in summative	Evaluate
11	Domain D: Data and Analysis	Standard 1: Students will be able to understand the scope of data science, how computer systems collect, store, process, visualize, and interpret data	Benchmark I: Students will be able to define and explain how to collect, store, analyze, visualize data	SLO CS-10-D-01	Students will understand and explain the scope of data science, Artificial Intelligence (AI), and Machine Learning (ML), including types of supervised and unsupervised learning models, and their applications to common real-world problems.	Matched SLO		Remember
12	Domain D: Data and Analysis	Standard 2: Students will get an introduction to the relational data model, relational database engines, and SQL and how to design good schemas.	Benchmark I: Students will be able to define and explain how to collect, store, analyze, visualize data	SLO CS-10-D-02	Students will understand and explain the types, uses, and methods of data visualizations and understand the benefits of visualizing data	Matched SLO		Remember
13	Domain D: Data and Analysis	Standard 3: What is AI and machine learning, and how does it relate to data and data science	Benchmark I: Students will be able to define and explain how to collect, store, analyze, visualize data	SLO CS-10-D-03	Students will be able to apply stages of the data science life cycle e.g. understanding a real-world business problem, data gathering, building model, interpreting results).	Matched SLO		Apply
14	Domain E: Applications of Computer Science	Standard 1: Students will understand computer technologies such as Blockchain / AI / IoT / Cloud Computing / Game design and development	Benchmark I: Students learn about different popular fields in Computer Science like AI, Cloud Computing, IoT, and Blockchain.	SLO CS-10-E-01	Students will be able to describe uses and applications that are enabled by technologies like IoT, and Blockchain	Matched SLO		Remember
15	Domain E: Applications of Computer Science	Standard 2: Students should be able to understand how computers learn, make decisions, and the applications, challenges, and social implications of AI	Benchmark I: Students learn about different popular fields in Computer Science like AI, Cloud Computing, IoT, and Blockchain.	SLO CS-10-E-02	Students will be able to explain that AI can be applied to specific applications in areas like NLP, Robotics, Speech Recognition, etc.	Matched SLO		Remember
16	Domain E: Applications of Computer Science	Standard 2: Students should be able to understand how computers learn, make decisions, and the applications, challenges, and social implications of AI	Benchmark I: Students learn about different popular fields in Computer Science like AI, Cloud Computing, IoT, and Blockchain.	SLO CS-10-E-03	Students will be able to demonstrate the social implications of AI	Matched SLO		Apply
17	Domain F: Impacts of Computing	Standard 1: Students will be able to understand ethics and laws related to computing and the use of computing devices, media, data, the internet, and the application of personal privacy and network security.	Benchmark I: Students will obtain knowledge of ethical and legal issues surrounding the use of computing. Benchmark II: Students will understand privacy and network security issues surrounding computing applications and devices they use everyday Benchmark III: Students will understand the role of assistive technologies and understand the implications of the digital divide	SLO CS-10-F-01	Understand and apply safe & responsible use of the internet to prevent addiction, promote information and data security	Matched SLO		Apply
18	Domain F: Impacts of Computing	Standard 2: The environmental, cultural, and human impact of computing and assistive technologies for the modern world.	Benchmark I: Students will obtain knowledge of ethical and legal issues surrounding the use of computing. Benchmark II: Students will understand privacy and network security issues surrounding computing applications and devices they use everyday Benchmark III: Students will understand the role of assistive technologies and understand the implications of the digital divide	SLO CS-10-F-02	Evaluate the impact of and apply strategies to prevent cyberbullying/harassment	Matched SLO		Analyse
19	Domain F: Impacts of Computing	Standard 2: The environmental, cultural, and human impact of computing and assistive technologies for the modern world.	Benchmark I: Students will obtain knowledge of ethical and legal issues surrounding the use of computing. Benchmark II: Students will understand privacy and network security issues surrounding computing applications and devices they use everyday Benchmark III: Students will understand the role of assistive technologies and understand the implications of the digital divide	SLO CS-10-F-03	Analyze the impacts of the digital divide on access to critical information	Matched SLO		Analyse
20	Domain G: Digital Literacy	Standard: Collect & analyze information and publish to various audiences using digital tools and media-rich resources, and use digital tools to design and develop a significant digital artefact through research design, data collection, and communication.	Benchmark I: <i>Collect & analyze information and publish to various audiences using digital tools and media-rich resources.</i>	SLO CS-10-G-01	Communicate and publish key ideas and details to a variety of audiences using appropriate digital tools and media-rich resources	Matched SLO		Understand