

CompuScholar, Inc.
Alignment to Nevada "**Computer Science**" Course Standards

Nevada Course Details:

Course Name:	Computer Science
Primary Cluster:	Information Technology
CIP Code(s):	11.0701
Credit:	1
Grade Level:	9th-12th
Program Standards Link:	Program Standards - Computer Science (2018)
Framework Link:	Curriculum Frameworks - Computer Science (2018)

CompuScholar Course

Course Title:	Windows Programming with C#
Course ISBN:	978-0-9887070-0-9
Course Year:	2019

Note 1: Citation(s) listed may represent a subset of the instances where objectives are met throughout the course.

Note 2: Citation(s) for a "Lesson" refer to the "Lesson Text" elements and associated "Activities" within the course, unless otherwise noted. The "Instructional Video" components are supplements designed to introduce or re-enforce the main lesson concepts, and the Lesson Text contains full details.

Course Description

CompuScholar's "Windows Programming with C#" is a computer science course based on the Microsoft C# language. This document demonstrates how the course meets standards within the Nevada Computer Science sequence. The Nevada standards listed below represent a 3-year / 3-Level program (L1, L2, L3) and different performance indicators apply to different levels. The applicable level is marked next to each citation.

"Windows Programming with C#" is a 1-year course that can be flexibly applied to any chosen Nevada "level" at the discretion of the local school or district.

Course Standards

CONTENT STANDARD 1.0 : UNDERSTAND ALGORITHMS AND PROGRAMMING	CITATION(S)	LEVEL(S)
PERFORMANCE STANDARD 1.1 : APPLY ALGORITHMS		
1.1.1 Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests	Chapter 7, Lesson 3 Chapter 14, Lesson 1 Chapter 18	1
1.1.2 Describe how artificial intelligence drives many software and physical systems	Suppl. Chapter 3, Lesson 3	2
1.1.3 Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem	Chapter 18 (student-directed project can accommodate this topic).	2

1.1.4 Use and adapt classic algorithms to solve computational problems	Chapter 7, Lesson 3 Chapter 14, Lesson 1	2
1.1.5 Develop classic algorithms in code to solve computational problems	Chapter 7, Lesson 3 Chapter 14	2, 3
1.1.6 Evaluate algorithms in terms of their efficiency, correctness, and clarity	Chapter 14	3
PERFORMANCE STANDARD 1.2 : IMPLEMENT CONTROLS		
1.2.1 Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made	Chapter 5 Chapter 11 Suppl. Chapter 1, Lesson 8	1
1.2.2 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions	Chapter 18 (student-directed project with full SDLC).	1, 2
1.2.3 Illustrate the flow of execution of a recursive algorithm	Chapter 14, Lessons 2 -3	3
1.2.4 Implement conditional controls in code	Chapter 5	3
1.2.5 Implement recursive algorithms in code	Chapter 14, Lessons 2 -3	3
PERFORMANCE STANDARD 1.3 : UTILIZE VARIABLES		
1.3.1 Demonstrate the use of both linked lists and arrays to simplify solutions, generalizing computational problems instead of repeatedly using simple variables	Chapter 11	1
1.3.2 Compare and contrast fundamental data structures and their uses	Chapter 11 Suppl. Chapter 1, Lesson 8	1
1.3.3 Implement arrays in code	Chapter 11, Lesson 1	2, 3
1.3.4 Implement ArrayLists and LinkedLists in code	Chapter 11, Lesson 2	2, 3
PERFORMANCE STANDARD 1.4 : CONSTRUCT SOLUTIONS USING MODULARITY		
1.4.1 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects	Chapters 9, 12, 13, 16	1
1.4.2 Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs	Chapter 9	1
1.4.3 Construct solutions to problems using student-created components, such as procedures, modules and/or objects	Chapters 9, 12, 13, 16, 17, 18	2
1.4.4 Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution	Chapter 14, Lessons 1, 3 Chapter 18 (student-directed project)	2
1.4.5 Demonstrate code reuse by creating programming solutions using libraries and APIs	.NET Framework used throughout the course	2, 3

PERFORMANCE STANDARD 1.5 : DEMONSTRATE PROGRAMMING AND DEVELOPMENT		
1.5.1 Systematically design and develop programs for broad audiences by incorporating feedback from users	Chapter 18 (student-directed project includes feedback) Suppl. Chapter 2, Lesson 1	1
1.5.2 Evaluate licenses that limit or restrict the use of computational artifacts when using resources such as libraries	Chapter 1, Lesson 5	1
1.5.3 Evaluate and refine computational artifacts to make them more usable by all and accessible to people with disabilities	N/A (See our Web Design course)	1
1.5.4 Design and develop computational artifacts while working in team roles and using collaborative tools	Chapter 18 Suppl. Chapter 3, Lesson 4	1
1.5.5 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs	Chapter 18 Suppl. Chapter 2, Lesson 1	1
1.5.6 Plan and develop programs for broad audiences using a software life cycle process	Chapter 18 Suppl. Chapter 2, Lesson 1	2
1.5.7 Explain security issues that might lead to compromised computer programs	Chapter 1, Lesson 6	2
1.5.8 Develop programs for multiple computing platforms	N/A (See our Java course)	2
1.5.9 Use version control systems, integrated development environments (IDEs), and collaborative tools and practices (code documentation) in a group software project	Chapter 18 Visual Studio IDE used throughout the course	2
1.5.10 Develop and use a series of test cases to verify that a program performs according to its design specifications	Chapter 18 Suppl. Chapter 2, Lesson 1	2
1.5.11 Modify an existing program to add additional functionality and discuss intended and unintended implications, e.g., breaking other functionality	Chapter 18, Lesson 4 (project includes regression testing)	2
1.5.12 Evaluate key qualities of a program through a process such as a code review	Chapter 10, Lesson 4	3
1.5.13 Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems	Chapter 1, Lesson 4	3

CONTENT STANDARD 2.0 : UNDERSTAND COMPUTING SYSTEMS	CITATION(S)	LEVEL(S)
PERFORMANCE STANDARD 2.1 : DESCRIBE DEVICES		
2.1.1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects	Chapter 1, Lessons 2 - 3	1

PERFORMANCE STANDARD 2.2 : COMPARE HARDWARE AND SOFTWARE		
2.2.1 Compare levels of abstraction and interactions between application software, system software, and hardware layers	Chapter 1, Lesson 3	1
2.2.2 Categorize the roles of operating system software	Chapter 1, Lesson 3	2
PERFORMANCE STANDARD 2.3 : EXPLAIN TROUBLESHOOTING		
2.3.1 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors	Chapter 10	1
2.3.2 Illustrate ways computing systems implement logic, input, and output through hardware components	Chapter 1, Lesson 2	2

CONTENT STANDARD 3.0 : UNDERSTAND DATA AND ANALYSIS	CITATION(S)	LEVEL(S)
PERFORMANCE STANDARD 3.1 : EVALUATE STORAGE SOLUTIONS		
3.1.1 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	Chapter 4, Lesson 5 Suppl. Chapter 1, Lesson 1	1
3.1.2 Evaluate the tradeoffs in how data elements are organized and where data is stored	Chapter 11 Suppl. Chapter 1, Lesson 8	1
3.1.3 Demonstrate the ability to store bit representation of real-world phenomena, characters, numbers, and images	Chapter 4, Lesson 5 Suppl. Chapter 1, Lesson 1	2
PERFORMANCE STANDARD 3.2 : CREATE USING COLLECTION, VISUALIZATION, AND TRANSFORMATION		
3.2.1 Create interactive data visualizations or alternative representations using software tools to help others better understand real-world phenomena	Chapter 18 (student-directed topics) Suppl. Chapter 1, Lessons 5 - 6	1
3.2.2 Use data analysis tools and techniques to identify patterns in data representing complex systems	Suppl. Chapter 1, Lessons 5 - 6	1
3.2.3 Select data collection tools and techniques to generate data sets that support a claim or communicate information	Suppl. Chapter 1, Lessons 5 - 6	3
PERFORMANCE STANDARD 3.3 : CREATE USING INFERENCE AND MODELS		
3.3.1 Create computational models that represent the relationships among different elements of data collected from a phenomenon, process, or model	Chapter 18 (student-directed topics) Suppl. Chapter 1, Lessons 5 - 6	1
3.3.2 Evaluate the ability of models and simulations to test and support the refinement of hypotheses	Suppl. Chapter 1, Lessons 5 - 6	3

CONTENT STANDARD 4.0 : UNDERSTAND IMPACTS OF COMPUTING	CITATION(S)	LEVEL(S)
PERFORMANCE STANDARD 4.1 : EVALUATE THE IMPACT OF COMPUTING ON CULTURE		
4.1.1 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices	Suppl. Chapter 3	1
4.1.2 Test and refine computational artifacts to reduce bias and equity deficits	N/A	1
4.1.3 Demonstrate ways a given algorithm applies to problems across disciplines	Chapter 7, Lesson 3	1
4.1.4 Explain the potential impacts of artificial intelligence on society	Suppl. Chapter 3, Lesson 3	1
4.1.5 Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society	Suppl. Chapter 3, Lessons 1 - 2	2
4.1.6 Create computational artifacts to maximize their beneficial effects and minimize harmful effects on society	Chapter 1, Lesson 5	3
4.1.7 Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society	N/A (see Digital Savvy)	3
4.1.8 Predict how computational innovations that have revolutionized aspects of our culture might evolve	Suppl. Chapter 3, Lesson 2	3
PERFORMANCE STANDARD 4.2 : INCREASE SOCIAL INTERACTIONS		
4.2.1 Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields	Chapter 18 Suppl. Chapter 3, Lesson 4	1
4.2.2 Use tools and methods for collaboration to increase the productivity of a team	Chapter 18 Suppl. Chapter 3, Lesson 4	3
PERFORMANCE STANDARD 4.3 : EXPLAIN SAFETY, LAW, AND ETHICS RELATED TO COMPUTING		
4.3.1 Explain the beneficial and harmful effects that intellectual property laws can have on innovation	Chapter 1, Lesson 5	1
4.3.2 Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users	Suppl. Chapter 3, Lesson 1	1
4.3.3 Evaluate the social and economic implications of privacy in the context of safety, law, or ethics	Chapter 1, Lessons 5 - 6	1
4.3.4 Discuss the role of ethics in emerging technologies	Chapter 1, Lesson 5 Suppl. Chapter 3, Lessons 2 - 3	2
4.3.5 Debate laws and regulations that impact the development and use of software	Chapter 1, Lessons 5 - 6	3

CONTENT STANDARD 5.0 : UNDERSTAND NETWORKS AND THE INTERNET	CITATION(S)	LEVEL(S)
PERFORMANCE STANDARD 5.1 : EVALUATE NETWORK, COMMUNICATION, AND ORGANIZATION		
5.1.1 Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing	Suppl. Chapter 1, Lessons 2 - 4	1
5.1.2 Describe the issues that impact network functionality, e.g., bandwidth, load, delay, topology	Suppl. Chapter 1, Lessons 2 - 4	3
PERFORMANCE STANDARD 5.2 : DESCRIBE CYBERSECURITY		
5.2.1 Illustrate how sensitive data can be affected by malware and other attacks	Chapter 1, Lesson 6	1
5.2.2 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts	Chapter 1, Lesson 6	1
5.2.3 Compare various security measures, considering tradeoffs between the usability and security of a computing system	Chapter 1, Lesson 6	1
5.2.4 Explain tradeoffs when selecting and implementing cybersecurity recommendations	Chapter 1, Lesson 6	1
5.2.5 Compare ways software developers protect devices and information from unauthorized access	Chapter 1, Lesson 6	3

Employability Skills for Career Readiness Standards

CONTENT STANDARD 1.0: DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS	CITATION(S)	LEVEL(S)
PERFORMANCE STANDARD 1.1: DEMONSTRATE PERSONAL QUALITIES AND PEOPLE SKILLS		
1.1.1 Demonstrate a positive work ethic by coming to work every day on time, a willingness to take direction, and motivation to accomplish the task at hand	Chapter 18 (Team project with team roles & deliverables) Suppl. Chapter 2, Lesson 2	1, 2, 3
1.1.2 Demonstrate integrity by abiding by workplace policies and laws and demonstrating honesty and reliability	Chapter 18 (Team project with team roles & deliverables) Suppl. Chapter 2, Lesson 2	1, 2, 3
1.1.3 Demonstrate teamwork skills by contributing to the success of the team, assisting others, and requesting help when needed	Chapter 18 (Team project with team roles & deliverables) Suppl. Chapter 2, Lesson 2	1, 2, 3
1.1.4 Demonstrate positive self-representation skills by dressing appropriately and using language and manners suitable for the workplace	Chapter 18 (Team project with team roles & deliverables) Suppl. Chapter 2, Lesson 2	1, 2, 3
1.1.5 Demonstrate diversity awareness by working well with all customers and coworkers	Chapter 18 (Team project with team roles & deliverables) Suppl. Chapter 2, Lesson 2	1, 2, 3

1.1.6 Demonstrate conflict-resolution skills by negotiating diplomatic solutions to interpersonal and workplace issues	Chapter 18 (Team project with team roles & deliverables) Suppl. Chapter 2, Lesson 2	1, 2, 3
1.1.7 Demonstrate creativity and resourcefulness by contributing new ideas and working with initiative	Chapter 18 (Team project has roles, timelines, deliverables)	1, 2, 3
PERFORMANCE STANDARD 1.2: DEMONSTRATE PROFESSIONAL KNOWLEDGE AND SKILLS		
1.2.1 Demonstrate effective speaking and listening skills by communicating effectively with customers and employees and following directions	Multiple opportunities to speak, listen and follow directions	1, 2, 3
1.2.2 Demonstrate effective reading and writing skills by reading and interpreting workplace documents and writing clearly	Multiple opportunities to read and write technical documents	1, 2, 3
1.2.3 Demonstrate critical-thinking and problem-solving skills by analyzing and resolving problems that arise in completing assigned tasks	Hands-on tasks are completed throughout the course	1, 2, 3
1.2.4 Demonstrate healthy behaviors and safety skills by following safety guidelines and managing personal health	N/A (See Digital Savvy)	1, 2, 3
1.2.5 Demonstrate understanding of workplace organizations, systems, and climates by identifying “big picture” issues and fulfilling the mission of the workplace	Suppl. Chapter 2, Lessons 1 - 2	1, 2, 3
1.2.6 Demonstrate lifelong-learning skills by continually acquiring new industry-related information and improving professional skills	Suppl. Chapter 2, Lessons 2 - 3	1, 2, 3
1.2.7 Demonstrate job acquisition and advancement skills by preparing to apply for a job and seeking promotion	Suppl. Chapter 2, Lesson 2	1, 2, 3
1.2.8 Demonstrate time, task, and resource management skills by organizing and implementing a productive plan of work	Chapter 18 Suppl. Chapter 2, Lesson 1	1, 2, 3
1.2.9 Demonstrate mathematics skills by using mathematical reasoning to accomplish tasks	Chapter 5 Chapter 7	1, 2, 3
1.2.10 Demonstrate customer service skills by identifying and addressing the needs of all customers and providing helpful, courteous, and knowledgeable service	N/A (See Digital Savvy)	1, 2, 3
PERFORMANCE STANDARD 1.3 : DEMONSTRATE TECHNOLOGY KNOWLEDGE AND SKILLS		
1.3.1 Demonstrate proficiency with job-specific technologies by selecting and safely using technological resources to accomplish work responsibilities in a productive manner	Technical resources used throughout the course	1, 2, 3
1.3.2 Demonstrate proficiency with information technology by using computers, file management techniques, and software/programs effectively	Computers, file management and software used throughout the course	1, 2, 3
1.3.3 Demonstrate proper Internet use and security by using the Internet appropriately for work	Internet used safely and securely to access online course material	1, 2, 3
1.3.4 Demonstrate proficiency with telecommunications by selecting and using appropriate devices, services, and applications	Appropriate devices and applications used throughout the course	1, 2, 3