

Computers & I.T., Part 2 – Course Syllabus

Course Description:

This course is the second semester of Computers & I.T. This course introduces students to today's modern technology concepts on computers, devices, and the Internet. It covers the concepts of networks, the internet, programming, software development, artificial intelligence, and emerging technologies.

Credits - One Semester (0.5 Carnegie unit / CA: 5 credits)

Course Outline	Standards - CA, NV
<p>Unit 1 - Networks and the Internet</p> <ul style="list-style-type: none"> 1.1 Computer Networks 1.2 Ethernet Cable 1.3 Networking Topologies 1.4 How the Internet Works 1.5 Network Security 	<p>In this unit, students will learn about:</p> <p>The different types of computer networks, their parts, and the purpose of each part.</p> <p>The different types of networking topologies and networking layers.</p> <p>How data is transmitted over the network, how it is sent and received using the IP addresses.</p> <p>The commonly used network threats and how to circumvent those attacks.</p> <p>9-12.NI.5, 9-12.NI.6, 9-12S.NI.3 9-12.NI.NCO.1</p>
<p>Unit 2 - Tools of a Computer Programmer</p> <ul style="list-style-type: none"> 2.1 Computational Thinking 2.2 Programming Language 2.3 Programming Tools 2.4 Careers in Programming 	<p>In this unit, students will learn:</p> <p>How to use computational thinking to approach and solve problems.</p> <p>The types and components of a programming language.</p> <p>The different tools a programmer uses when writing code.</p> <p>How a team of programmers can use a version control system to create and maintain multiple versions of code solutions.</p> <p>Examples of software development jobs.</p> <p>9-12.IC.23, 9-12.IC.25, 9-12S.AP.26 9-12.IC.C.1, 9-12.IC.C.2, A9-12.AP.PD.8, A9-12.AP.M.3</p>
<p>Unit 3 - Software Development</p> <ul style="list-style-type: none"> 3.1 Types of Software 3.2 Software Development Life Cycle 3.3 Software Testing 	<p>In this unit, students will learn:</p> <p>The comparison between Closed-source and Open-source software and the different licenses used in Open-source software.</p> <p>The different Software Development Life Cycle Models.</p>

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<p>3.4 Project Management</p> <p>3.5 Databases</p>	<p>The principles in software testing and code reviews.</p> <p>The Agile Methodology and the Scrum Framework used in Software Development and Project Management.</p> <p>How a Database System persists data from the user's inputs.</p> <p>9-12S.IC.27, 9-12.AP.21, 9-12S.DA.7, 9-12.AP.16, 9-12.AP.22, 9-12.IC.27</p> <p>9-12.IC.C.1, 9-12.DA.S.2, 9-12.IC.C.2, A9-12.AP.PD.1, 9-12.IC.SI.1</p>
<p>Unit 4 - Introduction to AI</p> <p>4.1 What is AI?</p> <p>4.2 AI in Practice</p> <p>4.3 Machine Learning and Neural Networks</p> <p>4.4 Ethical Considerations and Impacts of AI</p> <p>4.5 AI Applications in Real-World Problems</p>	<p>In this unit, students will learn about:</p> <p>The basics of Artificial Intelligence (AI).</p> <p>Practical applications of AI in gaming and chatbots.</p> <p>The fundamentals of machine learning and neural networks and their roles in AI.</p> <p>Ethical considerations surrounding AI.</p> <p>Real-world applications of AI in addressing complex issues.</p> <p>9-12S.IC.27, 9-12S.IC.28, 9-12S.AP.10</p> <p>9-12.IC.C.4, A9-12.IC.C.3, A9-12.APA.1, A9-12.APA.2</p>
<p>Unit 5 - Emerging Technologies</p> <p>5.1 Introduction to Emerging Technologies</p> <p>5.2 Technology Trends</p> <p>5.3 Benefits and Risks of Emerging Technologies</p> <p>5.4 Social Engineering</p> <p>5.5 Responsible Innovation</p>	<p>In this unit, students will learn:</p> <p>What qualifies as an emerging technology?</p> <p>Current technology trends.</p> <p>Benefits and risks of emerging technologies.</p> <p>Ethical considerations when using and developing emerging technologies.</p> <p>Key principles of responsible innovation.</p> <p>9-12S.IC.28, 9-12S.IC.30, 9-12.IC.23, 9-12.IC.26</p> <p>A9-12.IC.C.3, A9-12.IC.SLE.1, 9-12.IC.C.1</p>