Homeschool Programming, Inc.

Survey of Computer Science

Course Syllabus and Planner

Updated January, 2016

Online Course Overview

Title: *Survey of Computer Science*

Length: 9 weeks / 30 – 40 hours

Student Pre-Requisites: Basic computer usage skills, 6th – 12th grade status.

Course Description

The *Survey of Computer Science* course is a short, lightweight introduction to computer science and digital literacy topics. The material is intended to be used as a fun exploration exercise suitable for after-school programs, enrichment, summer activities, or educational co-ops that meet infrequently.

The course focuses on hands-on activities in each lesson and **does not have graded components** (quizzes and tests) found in other CompuScholar courses that would appear as a graded class on a transcript. In addition, the course is primarily text-based; instructional videos are provided in a few key areas, but **videos are not provided in every lesson**.

Other introductory programming courses are not required; students merely need to have typical computer usage skills prior to starting this course.

Course Delivery

All content is delivered through an online system that allows students to work seamlessly both in the classroom and at home.

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Labs and Programming Environment

Each lesson typically contains guided, hands-on activities that students will complete on their own computer. A **Windows or Mac OS** computer is required to complete these activities!

Some units will rely on **free** 3rd party software. Step-by-step download and installation instructions will be provided within the course as needed.

Course Planner

The *Survey of Computer Science* course is arranged into 9 units with 4 lessons per unit. Each lesson is intended to be completed in a single one-hour window, with some variation depending on the particular topic and student skills. Therefore, the entire course may be completed in 30 – 40 hours.

Students will learn the skills needed to create their own simple web pages or computer programs. Advanced students are encouraged to go above and beyond the existing exercises to create their own unique projects.

The following planner assumes students are consuming 1 unit per week, spending about 4 hours per week. Students may move faster or slower than the suggested pace.

Week	Unit Description	Unit Lessons
1	**Unit One:** **Computer Boot Camp**	• Understanding Your Computer • Managing Files and Folders • Using Text Editors • Using Web Browsers
2	**Unit Two:** **Basic Web Pages in HTML**	• HTML Elements and File Layout • Headlines, Paragraphs, and Text • Styling Text • Creating Hyperlinks
3	**Unit Three:** **Images and Videos in HTML**	• Image Editing Software • Images as Content • Images as Background • Embedding Videos

Week	Unit Description	Unit Lessons
4	**Unit Four:** **Dynamic Web Pages with JavaScript**	• JavaScript Syntax • JavaScript Events and Functions • Managing and Styling Elements • Handling Mouse Events
5	**Unit Five:** **Digital Logic**	• Boolean Operators • Boolean Expressions and DeMorgan's Law • Introducing Logic.ly • Logic.ly Projects
6	**Unit Six:** **Programming Concepts in Greenfoot, Part 1**	• Programming Concepts • Working with Greenfoot • Creating a Scenario • Making Decisions in Code
7	**Unit Seven:** **Programming Concepts in Greenfoot, Part 2**	• Using Variables and Objects • Numeric Variables and Math • The Artwork Scenario • Constructor Functions
8	**Unit Eight:** **Programming Concepts in Greenfoot, Part 3**	• Mouse Input • Working with Strings • Arrays • Loops
9	**Unit Nine:** **Exploring CAD**	• Lego Digital Designer • Tinkercad, Part 1 • Tinkercad, Part 2 • Tinkercad, Part 3