ACS Course Outline

Date	Week #	Unit #	Unit Title	Topics	Assignments at a Glance
	1	**0**	Preliminaries	*** Course Introduction** Syllabus Intro Presentation Code Plagiarism Policy ACS Acknowledgement form	* Review the Course Introduction * Read the Syllabus * Read the Intro Presentation * Read the Code Plagiarism Policy * **Complete** the ACS Acknowledgement Form
	1	**0**	Preliminaries	*** Setup** **Instructions to set up your environment** Trinket account ePortfolio site student information form *** Participation/Discussion - CS Areas of Interest**	* Setup a Trinket account * Setup an ePortfolio site * **Fill out** student information **form** * Write discussion/reflection
8/15/16	**1**	1	Warm-up	*** Programming Warm-Up** Variables and Conditionals Functions and Scope	***** Read the **program design and style rubric** * Work through the **Variables and Conditionals** (analysis) exercises * Work through the **Variables and Conditionals** (synthesis) exercises * Work through the **Functions and Scope** exercises

	2	**2**	Program Design and Style	*** Function Decomposition** Introduction and exercises	***** Read the **articles on functions** and participate in discussion * Complete the exercises
	2	2	Program Design and Style	*** Program Readability and Comments** Introduction **Participation/Discussion - Code Documentation and Commenting** Using poorly-styled code - Exercises Enhancing well-documented code - Exercises	***** Read the **program design and style rubric** * Read the design and style examples in the **Introduction** ***** Read the **code commenting article** and participate in discussion * Code your (single) **poorly-styled exercise**, per the exercises assignment instructions * Code your (single) **well-documented exercise**, per the exercises assignment instructions
8/29/16	**3**	3	Built-in Data Structures	*** Data Structures** *** Lists** Lists (Revisited) *** Dictionaries** Introduction	* Work through the **Lists** tutorial online * Code the **Lists** tutorial exercises * Work through the **Dictionaries** tutorial online * Code the **Dictionaries** tutorial exercises

	4	3	Built-in Data Structures	*** Data Structures** *** Combining Lists and Dictionaries** * Mini project **Participation/Discussion - Lists & Dictionaries**	*** Code the Mini project** * Participate in discussion/reflection
	5	3	Built-in Data Structures	*** Data Structures** *** Dictionaries** Project 1 (individual) Project 2 (individual) *** Participation/Discussion - Data Structures**	***** Read the **program design and style rubric** * Code Data Structures project 1 * Code Data Structures project 2 * Read the article **Abstraction and Data Structures** and participate in discussion
	6	3	Built-in Data Structures	*** Data Structures - Projects** Maze Definition (individual) Maze Definition (team) *** Reflection/Discussion - Data Structures**	***** Read the **program design and style rubric** * Code (individual) Maze Definition project * Code (team) Maze Definition project * Write SOUL reflection
	7	4	Object-Oriented Programming **(OOP)**	*** Object-Oriented Programming (OOP)** Introduction Exercises (individual) *** Participation/Discussion - Object Oriented Programming**	* Work through the **Object Oriented Programming** (OOP) tutorial online * Code the **OOP** tutorial exercises * Participate in discussion/reflection
	8	4	OOP	*** OOP - Projects** Introductory Project (Seeing Turtles) Super Turtles - Project 1 - (individual)	***** Read the **program design and style rubric** * Read the description of **public, protected, and private class**

				Super Turtles Competition - Project 2 (team) *** Participation/Discussion - OO Programming**	**variables** * Code SuperTurtles project 1 (with enhancements: 1.1) * Code SuperTurtles project 2 (competition setup) *** Run the competition** * Participate in discussion/reflection
	9	4	OOP	*** OOP Projects** Maze Creation (Project 3) Maze Walking (Project 4) *** Participation/Discussion - OO Programming**	***** Read the **program design and style rubric** * Code the Maze Creation (Definition) * Code the Maze Walking Algorithm * Participate discussion/reflection
	10	5	Recursion	**Recursion** Introduction Exercises Mini Project (fluctuating stock prices) Combining Objects and Recursion (dominoes) *** Participation/Discussion - Recursion**	***** Read the **program design and style rubric** * Work through the **Recursion** tutorial online * Code the **Recursion** tutorial exercises * Participate discussion/reflection
	11	5	Recursion	*** Projects - Recursion** Recursive Maze Definition Recursive maze Walking *** Participation/Discussion - Recursion**	***** Read the **program design and style rubric** * Code Maze Definition (Creation) * Code Maze Walking Algorithm

					* Participate discussion/reflection
	12	6	Algorithms - Program Performance	*** Introduction - Algorithms** Linear Search Binary Search Binary Tree Maze Definition (new maze) Binary Tree Maze Walking (using new maze) *** Participation/Discussion - Program Performance**	* Work through the **Search** tutorials online * Code the **Search** tutorials exercises * Code the Maze Definition project * Code the Maze Walking project * Participate discussion/reflection
	13	**6**	Algorithms - Program Performance	*** Introduction - Algorithms** Data Mining/Analysis algorithms - https://rayli.net/blog/data/top-10-data-mining-algorithms-in-plain-english/ Prime Numbers Recursion *** Participation/Discussion - Program Performance**	
	14	7	Data Structures and Algorithms - Program Performance	*** Speeding up with Data Structures** Fibonacci Series Collatz (https://en.wikipedia.org/wiki/Collatz_conjecture) Rock-Paper-Scissors *** Participation/Discussion - Program Performance**	

	15	8	Machine Learning	*** Introduction - Machine Learning** Simple Examples *** Participation/Discussion - Machine Learning**	
	16	8	Machine Learning	*** Machine Learning** Q-Learning with OO Maze - https://trinket.io/library/trinkets/e3a6abbfc9 *** Participation/Discussion - Machine Learning**	
	17	9	Final Project	*** Final Project** * Problem Statement * Proposed Solution * Solution Architecture + Design * Coding * Project Documentation * Project Reflection	
	18	9	Final Project	*** Final Project** * Coding * Testing * Demo * Project SOUL Reflection	