Unity Game Development

General Information

Description

Unity Game Development is a high school class designed to give students a more advanced experience and knowledge in game development using the Unity Platform. Students will learn the basics of how to develop a game UI all the way through full creation of 3D games with the software. Students are expected to have taken an introductory computer science or game development course prior to the Unity course. Students will be prepared to take the Unity Programmer User Certification .

Expectations and Outcomes

Rex is dedicated to demonstrating tangible outcomes that change student perceptions of computer science. We use pre and post exams to test students' ability. We also help interested students acquire industry certifications to boost their college and post high school resumes. Here are some additional outcomes:

- Students will become more confident in using technology and computer science in solving problems in the future.
- Students will consider computer science as a possible career path for their futures.
- The school will increase the diversity and equity in computer science by offering this course through Rex Academy.
- Students will be able to analyze various artifacts and determine their functions, correct any types of errors, and explain how the artifact works.
- Students will behave ethically and responsibly when using technology.
- Students can articulate how technology affects their lives and how it impacts various parts of our society today, both in a positive and a negative way.

Course Materials

Prerequisites

This course requires an introductory computer science course to be taken prior to the class.

Device Requirements

Rex assumes that each student has access to the internet and a device that can access the internet. Students must have Unity downloaded onto their computer. Chromebooks and tablets will **not** work.

Additional Information and Resources

Attention to Equity and Diversity

Rex Academy is dedicated to bringing this course to all interested students, regardless of their backgrounds or the zip code which they reside in.

Rex provides 24/7 support and can provide a classroom teacher at the request of a school district to teach the class, thus removing the biggest obstacles associated with teaching computer science, lack of curriculum and the lack of a qualified teacher. Rex is determined to partner with school districts

that have been historically underserved and to increase participation among women and minorities in computer science.

Interdisciplinary Instruction

Rex Academy combines technological instructional materials with common core alignment to infuse other disciplines into the curriculum.

Beyond just teaching the basics of computer science, Rex also incorporates other fields of study into its curriculum. In the case of Computer Science 1, we have incorporated math, English, and various degrees of science into some of our problem statements.

Course Syllabus

Unit Number	Topic		Brief Description
Part 1: Intro to Unity	**Pre-Test / Unity Software Installation / MDA**		Students will download the Unity software, learn about approaching game development from the MDA philosophy, and take the pre-test.
Part 2: Building a Text Adventure	**Brainstorming, Prototyping, Variables, Data types, Conditionals, UI & Console**		Students will learn the basics of using Unity while they build a text adventure.
Part 3: Building a space invader game	**Aesthetics, Project Timeline, Player Movement, Prefabs, Enemy movement, and Collisions**		Students will learn about player movements as they build a space invader game.
Part 4: 2D Platformer	**Timeline, Tile Palette, and Player Movement**		Students will learn about the tile palette and different player movement as they build a 2D Platformer.
Part 5: 3D Platformer	**Player Movement and Animator, Cinemachine, Working with Prefabs, Hazards and traps, Sounds**		Students learn the basics of moving from 2D to 3D player movement and game development through the creation of as 3D platformer.
Part 6: Snowball Fight	**Player Controller, Raycasts and Projectiles, and Building**		Students will learn the player controller and rays as they build a Snowball Fight.
Part 7: Personal Project	**Brainstorming, SDLC, Design, Prototyping, Alpha/Beta testing, Finalizing, and Publishing.**		Students will follow the SDLC to create their own Unity project showing mastery of the concepts.