California State University, Northridge
Summer Academic Enrichment Program

Science, Art and Computer Games - Advanced

Course Overview:
Science, Art, and Computer Games - Advanced is an opportunity for students to build on their current Scratch programming skills. This course will use Scratch, creativity, logic and art skills to create computer games, animations, and simulations (scratch.mit.edu). Students will use simple math concepts and functions from Pre-Algebra and Algebra in creating the various computer games, animations and simulations. No specific prior experience in math is required; all necessary skills will be covered. Some experience programming in Scratch is helpful.

Course Description:
Students enrolled in Science, Art, and Computer Games - Advanced focus will define variables, use integers, navigate the coordinate grid, create graphs, use functions and formulas, random numbers and comparison operators to bring their art to life and develop solid and advanced programming skills. Class will include a review of math concepts and group work. The Science, Art & Computer Games class is a science-enrichment experience and is an innovative curriculum being developed at CSUN. Overseen by Professor Foley, the curriculum is designed to improve science understanding and research skills through collaborative computer modeling and testing. Students in the class will participate in an educational research project.

PLEASE SEE THE ACCOMPANYING LETTER AND RELEASE FORM.

Course Goals and Objectives

Correlates with the California Language Arts Standards

Grade 7: Expressions & Equations, and The Number System. Grade 8: The Number System, Expressions & Equations, and Functions.

1. **Goal:** Review programming within Scratch.
   - **Objective:** Program a cat to follow the mouse pointer as you move it around the screen.
     - a. Review ASCII character encoding
     - b. Design and crate multiple animations with various Sprites

2. **Goal:** Create and design two player games
   - a. Design and create an interactive building program
   - b. Design and create a calculator

3. **Goal:** Students create and design their own projects with minimal guidance

4. **Goal:** Students create and design projects with varying levels.
   - a. Create a program that paints all colors of one shade value
   - b. Create a game of chance for two players
   - c. Create and design a role playing game.
5. **Goal:** Students learn how to embed their work in an html file
6. **Goal:** Students learn how to upload their work to the Scratch website.
7. **Goal:** Students learn how to download, manipulate, and comment someone else’s Scratch program.

**Course Outline/Programs:**
- Graphics and Slideshows
- Hello World
- Character Dance
- Virtual Fish Tank
- Virtual Photo Scrapbook
- Storytelling
- Quiz Game
- Number Guess Game
- Games of Fortune
- Arcade Games
- Ball Chase
- Crazy Eight Ball
- Family Picture Movie
- Doodle
- Math and Finance

**Course Materials:**

**Textbooks and Media**
No textbook. We will use Scratch (scratch.mit.edu) as our primary modeling tool. This tool will improve math understanding, logical thinking, problem solving, and computer programming skills. Students will need to sign up for a free Scratch account to use the program. Other software and materials will be provided in the lab.

Students should bring the following on a daily basis:
1. USB Flash Drive (1GB is sufficient)
2. A spiral notebook
3. Black, blue and red pens
4. Ruler
5. Homework
Grading Policy

The final grade for the class will not be a letter grade. In place of a letter grade, a developmental level will be assigned based on a rubric. Students will receive a final score of: beginning, emerging, developing, capable, experienced, or exceptional.

Classroom Behavior:
The student is expected to demonstrate mature, polite behavior and extend courtesy to everyone at all times:
1. Actively participate, and respectful verbal and nonverbal interaction with all opinions must be shown at all times.
2. Since differing views will be expressed, the teacher and the student(s) will mutually maintain a safe environment for courteous dialogue.
3. Respect is to be shown for all CSUN property.
4. No food or beverages will be permitted in the classroom. Snacks must be eaten outside between the designated breaks.
5. Warnings for behavior / discipline problems will be given once. Any further problems will result in a phone call to the parent(s) or guardian(s) and possible dismissal from the program.

SAEP Electronics Policy

Cell phones, music players and headphones are not permitted to be used during class hours.
   a. Please put your cell phone on silent (NOT vibrate).
   b. No texting is allowed during class.

You will be given one verbal warning if the above is not followed. Should a second warning be necessary, your cell phone, music player and/or headphones will be confiscated and held by the teacher until after class. If a third time occurs, your cell phone, music player and/or headphones will be confiscated and held in the SAEP office and MUST BE PICKED UP BY A PARENT.
Science, Art and Computer Games - Advanced

After reading through the syllabus, please sign and date and have your student return it to class. The signature constitutes your commitment to the class as we partner to make the next five weeks a life-long educational experience for your student.

**Student/ Parent Agreement:**
Please bring this signed and dated Science, Art and Computer Games – Advanced syllabus agreement to class tomorrow.

If you do not understand any portion of this syllabus, or if you have any questions regarding this class, please do not hesitate to email the teacher.

We have read and understand the contents of this syllabus.

Student name ______________________________________________________

Student signature____________________________________________________

Date__________________

Parent/Guardian name ____________________________

Parent/Guardian signature_____________________________________________

Date_________________

Phone _____________________________________________________________

E-mail_____________________________________________________________