

# UCSD StudentTECH 2014

## Computer Science for High School Students

Sponsored by the San Diego Supercomputer Center, University of California, San Diego

### Preparation for Computer Science 1: Alice™ for High School Students!

Monday- Friday, June 16-20, 2014

Class meets at the University of California, San Diego from 8:30am - 3:00pm.

**Alice™** – Educational software that introduces computer programming in an engaging, intuitive and motivating 3D animation environment.

#### Course Overview

Alice is a 3D programming environment that makes it easy to create animation for storytelling, playing an interactive game, or sharing a video on the web. Alice is designed to be a teaching tool for introductory computing. It uses 3D graphics and a drag-and-drop interface to facilitate a more engaging, less frustrating first programming experience. Created for middle school, high school and college students, this software program offers a first glimpse into the world of computer programming. Come join the fun!

Alice allows students to learn fundamental programming concepts in the context of creating animated movies and simple video games. In Alice, 3-D objects (e.g., people, animals, and vehicles) populate a virtual world and students create a program to animate the objects.

In Alice's interactive interface, students drag and drop graphic objects to create a program, where the instructions correspond to standard statements in a production oriented programming language, such as Java, C++, and C#. Alice allows students to immediately see how their animation programs run, enabling them to easily understand the relationship between the programming statements and the behavior of objects in their animation. By manipulating the objects in their virtual world, students gain experience with all the programming constructs typically taught in an introductory programming course.

Topics will include learning about program design, object-oriented and event-driven programming, stepwise refinement, sequence, selection, iteration, using functions, and most importantly, problem solving skills critical to become a successful computer programmer.

Alice was created by Carnegie Mellon University to create an environment where a student's first exposure to computer programming is successful.

For more information on this exciting software, please visit <http://alice.org/>.

#### Course Goals and Learning Objectives

The goal of this course is to provide a strong and creative foundation in computer science. This is a hands-on class with object programming and problem solving at its core. The course will take the students through design, develop and implementation of several 3D animation computer programs.

The class is geared to high school students. It is useful if a student has a basic understanding of Windows and using a computer. Additionally successful completion of Algebra 1 is a prerequisite. Please provide transcripts.

#### How the Class Will Be Taught

This course is taught using classroom and lab instruction employing lecture and demonstration, in-class exercises, student participation, and class activities leading to a final project. Classes

will include introductory concept presentations, followed by in-class exercises. Throughout, there will also be handouts and brief presentations on relevant concepts.

### **Reading**

The course will be primarily based on a variety of handouts and online readings, the following is recommended if your student desires further reading:

Dann, Wanda P., Cooper, Stephen, Pausch, Randy, Learning to Program with Alice Second Edition, Pearson Prentice Hall, isbn 978-0-13-208519-9

Please Note: This course will require that a school transcript accompany the application for verification of required prerequisite course completion.

### **Topics to be Covered During This Workshop**

#### Module 1: Introduction to Alice

- Getting Started with Alice
- Program Design and Implementation
- Programming: Putting Together the Pieces

#### Module 2: Object-Oriented and Event-Driven Programming Concepts

- Classes, Objects, Methods and Parameters
- Interactive: Events and Event Handling

#### Module 3: Using Functions and Control Statements

- Functions
- If/Else
- Repetition

#### Module 4 and 5: Final Presentation

- Algorithm Development
- Student Projects

**Instructor:** Terrie Canon, Associate Professor, Palomar College

### **Prerequisites:**

- Must be a current high school student in grade 9-12.
- Successful completion of Algebra 1. **Please provide transcripts.**
- A basic understanding of computers.

**Course fee: \$240.00**

**Registration deadline: May 30, 2014. Space is limited.**

If you have any questions regarding this workshop or the application process, please contact Ange Mason via phone at 858 534-5064 or via email at [amason@ucsd.edu](mailto:amason@ucsd.edu).

**Preparation for Computer Science 1: Alice™ for High School Students!**  
*June 16 – 20, 2014*

**Applicant Information:** (Please Print)

Name: \_\_\_\_\_  
Last First Middle

Mailing address: \_\_\_\_\_  
Street Address or Post Office Box City/State Zip

Telephone (home): \_\_\_\_\_ Telephone (cell): \_\_\_\_\_

Date of birth: \_\_\_\_\_ Age as of June 30, 2014: \_\_\_\_\_

Gender (as your student chooses to self identify): \_\_\_\_\_ Male \_\_\_\_\_ Female

San Diego County High School: \_\_\_\_\_  
School name District

Grade completed by June 2014: \_\_\_\_\_

Parent or Guardian Email: \_\_\_\_\_

**Parent or Legal Guardian Information (if applicant is under 18):**

Name: \_\_\_\_\_

Mailing address: \_\_\_\_\_  
Address or Post Office Box City/State Zip Street

Telephone: (Home) \_\_\_\_\_ (Work) \_\_\_\_\_

Email: (Please Print) \_\_\_\_\_

**Course fee: \$240.00**

**Please make your check or money order payable to UC Regents and submit both payment and application in a single envelope to the following address:**

Ange Mason  
Attn: Student Summer Workshops  
San Diego Supercomputer Center  
University of California, San Diego  
9500 Gilman Drive, Mail Code 0505  
La Jolla, CA 92093-0505

If you have any questions regarding this workshop or the application process, please contact Ange Mason via phone at 858 534-5064 or email at [amason@ucsd.edu](mailto:amason@ucsd.edu).