UCSD StudentTECH 2016
Computer Science for Middle School Students
Sponsored by the San Diego Supercomputer Center, University of California, San Diego

Project GUTS: Computer Science in Middle School Science Courses

Monday- Friday, August 15-19, 2016

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

Course Overview

Are you ready to learn how to use code to solve problems in science? In this course you will learn simple block coding through StarLogo Nova and pair programming to first understand coding basics and then apply those skills to understand science concepts, earth science, life science, and physical science!

What is StarLogo Nova?

StarLogo Nova is a programming environment that lets students and teachers create 3D games and simulations for understanding complex systems. StarLogo Nova is the new online iteration of StarLogo, following in StarLogo TNG's footsteps. StarLogo Nova builds upon TNG's innovations, with several language refinements and new features, including:

- Create, edit, and run games and simulations right in the browser, no installation necessary.
- Share projects in public galleries for the world to see.
- Collaborate on projects with other users.

How Can Students Use StarLogo Nova?

Incorporate your own sounds and 3D models into your projects.
Organize code more clearly, with all runtime code now placed on breed pages.
Program agent interactions more easily with new Detection blocks.
Customize your breeds with user-created traits like energy, health, lives, inventory, etc.
Easily work with hundreds of agents, even on older computers or Chromebooks.
With no predefined agent limits, create 10,000 agents or more on powerful computers.

Topics to be Covered During This Workshop

Day 1: Modeling and Simulation

- 6 hours plus extensions
- This module introduces basic concepts in modeling complex systems through hands-on activities and participatory simulations. A scaffolded serious of highly engaging design and build activities guide students through developing their first computer model is StarLogo Nova, a modeling and simulation environment developed at MIT.
Day 2: Water as a Shared Resource
- 5 hours plus extensions
- This module considers how humans are impacting the environment and how resources are being used and managed (or not managed) for the future. In particular, the module explores ground water as a shared resource and factors that affect how a resource is shared among stakeholders.

Day 3: Ecosystems
- 5 hours plus extensions
- This module begins with an exploration of a simple predator-prey model to consider who eats whom – and what happens when 1 population grows faster than another. After learning more about ecosystem dynamics, producers and consumers, and interdependent relationships with an ecosystem, students develop their own model of a local ecosystem.

Day 4: Chemical Reactions
- This module explores chemical reactions: the conditions under which they occur, the evidence of a chemical reaction, limiting reactants versus reactant in excess, and when chemical reactions stop.
- 5 hours plus extensions

Day 5: Make Your Own

Instructor: Rachael Tarshes, Ed. D., Science Teacher at San Diego Unified School District

Prerequisites:
- The course is open to students in grades 7-8.
- A basic understanding of computers
- A keen interest in computer science

Course fee: $260.00

Registration is open until filled. Register early as space fills quickly. 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.