

## Existing Computational Thinking/Coding Efforts in Wyoming

### Student oriented programs

#### 1. Code camps @ The Science Zone

Title: DIY Computer Game

Ages: 9-14

Dates: 8/8-8/12

Time: 8:30 AM - 12:00 PM

Description:

This camp will give participants an introduction to computer programming using the software Scratch 2.0 to create and play a computer game. Learn how to plan a storyboard, design a background, and control characters, then post your game online to play at home!

Title: Lego!

Ages: 5-15

Dates: 6/27-6/29

Time: 1:00-4:30 PM

Description:

Legos are fun to build with, but did you know you can also use them to create robots? Whether you're just starting out or have been building robots for years, this class will help hone building or programming skills for any level. This class is open to beginners through advanced participants, so please make note of skill level when registering.

#### 2. STARBASE Summer Camps (D. of Defense program)

6-8 grade, Laramie County

EV3 Robotics June 13-16

Computer Aided Design June 27-30

EV3 Robotics July 11-14

#### 3. Energy Summer Institute

June 19-June 24

Grades 9-12

University of Wyoming

Description: A 5-day STEM camp designed to fire-up students imagination related to energy challenges facing the world.

#### 4. Engineering Summer Program

June 19-25

For rising high school seniors

University of Wyoming

Description: Students will participate in hands-on laboratory activities in a variety of engineering disciplines. They'll work directly with civil, chemical, computer science, atmospheric science, electrical and mechanical engineering faculty members.

**5. Summer Research Apprentice Program**

June 12-July 22

High School age students

University of Wyoming

Description: The program provides students with a meaningful, hands-on experience in science, mathematics, statistics, and/or engineering research. The ultimate goal of SRAP is to stimulate interest in one of these fields for a college major and ultimately as a career choice. Ethnic, racial, gender minority, and first generation college bound students (whose parents did not complete a four-year undergraduate degree) are especially encouraged to apply.

**6. High School Summer Institute**

June 5-25

Sophomores

University of Wyoming

Description: The mission of the Summer High School Institute is to provide a place where some of the state's most intellectually talented sophomores could gather before their junior and senior years, live and study in an environment with no pressure for grades, and share ideas and friendship with other gifted students. Includes course in robotics, an Introduction to Computer Electronics Engineering, and a Virtual Reality Programming course.

**7. TACoS: The Artful Craft of Science Summer Camp**

25 fourth-sixth graders

TBD in Laramie.

Description: This one-week camp runs from 10 a.m.-2 p.m. daily and provide students the opportunity to learn about some basic programming through Legos, Raspberry pi, and Arduinos.

**8. Cyber Plant Camp: Using technology to keep plants alive**

June 21-23

Grades 5-7

UW

Description. Over the course of three days, middle school students will build a Raspberry Pi moisture sensor to monitor a plant. They will apply basic concepts related to plant physiology and programming to develop a tool that sensors soil moistures, displays moisture reading on a LCD screen, and sends text messages when plant watering is needed.

## **Teacher oriented summer programs**

### **1. RAMPED 2016**

July 1, and July 5-15

Supports 25 Wyoming Teachers interested in STEM & Computing

Will focus on Robotics, Applied Mathematics, Physics and Engineering Design

Contact: Dr. Andrea Burrows [aburrows@uwyo.edu](mailto:aburrows@uwyo.edu)

### **2. Introduction to Engineering Design using Arduinos**

College of Engineering and Applied Sciences

Dates: June 13-17

### **3. Introduction to Engineering Design using Raspberry Pi's**

College of Engineering and Applied Sciences

Dates: June 20-23

### **4. Beauty & Joy of Computing---Training to teach an AP Computer Science Principles Course**

UW

July 11-14, 18-21 and July 25-28

## Computer Science Endorsement Program

- Provisional Program approval from Wyoming PTSB in April 2016
- Expect to receive endorsement from Council for the Accreditation of Educator Preparation (CAEP) in August.
- Will align with the International Society of Technology in Education (ISTE) standards which emphasize: creativity & innovation; communication & collaboration; research and information fluency; and critical thinking, problem solving and decision-making.
- Key program elements are:
  - Computer science courses that include: programming, object-oriented design, data structures and algorithms, computer hardware and organization, and computational models.
  - A seminar-type course that covers the history of computer science (including theory, hardware, and software), addresses the nature of the field and its relationship with other disciplines, and explores the details of various computer science curricula.
  - A computer science teaching methodology course.

The last two are new, and will begin being offered in Fall 2016. The other courses are existing courses.

- Great collaboration between College of Education, College of Engineering & Applied Sciences, Department of Computer Science, Wyoming Department of Education, and Wyoming PTSB.

# THE BEAUTY & JOY OF COMPUTING IN WYOMING

## Call for Participation



In AY 2016-17 The College Board will launch an Advanced Placement Program<sup>®</sup> called Computer Science Principles. We are seeking teachers from Wyoming and surrounding states willing to participate in an educational research project that will adapt and launch an innovative preparatory course for the exam. Participants will teach the course on an exploratory basis. Training will be provided to participating teachers.



Science



Technology



Engineering



Mathematics

### Background

The course will help prepare students for *STEM* majors, most of which assume prerequisite knowledge of basic programming and introductory computer science, fluency with digital technologies, and the ability to effectively identify and analyze information. Students taking this course will also learn to appreciate the value of collaborative problem solving.

### Goals

The research goal is to adapt for high school students the highly regarded *The Beauty and Joy of Computing* course taught at UC Berkley. The course attracts a wide variety of students; there are currently more women than men enrolled in the course. We will focus on how best to prepare teachers to provide the curriculum and guide students to be successful on the AP<sup>®</sup> exam. We will also develop training for *Snap!* the easy to use graphical programming language designed for the course.



### Training

The training will consist of 8 or, optionally, 12 days, in July.

#### When

Summer 2016, 2017, or 2018.

#### Where

UW Campus

#### Financial Support

Stipend & travel reimbursement provided. 1-3 hours Graduate or PTSB credit available



### Calendar

#### Summer 2016

July 11-14, 18-21 Intro to Snap!  
July 25-28 Teacher training

#### Summer 2017

July 10-13, 17-20 Intro to Snap!  
July 24-27 Teacher training

#### Summer 2018

July 9-12, 16-19 Intro to Snap!  
July 23-26 Teacher training



To become a participant, fill out the online application form at [bjc-wy blog](#)

There will also be frequent project updates on the blog.

### *Further Information*

#### AP Computer Science Principles

<https://advancesinap.collegeboard.org/stem/computer-science-principles>

#### The Beauty and Joy of Computing

<http://bjc.berkeley.edu/>

### *The Research Team*

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