CSCI 591, Computer Science in the Classroom: The Joy and Beauty of Data

A 2-credit, MSU Master of Science in Science Education Course

Summer 2017

Overview

Welcome to the exciting world of computational thinking and data science! Teachers who enroll in this course will extend their knowledge of the Python programming language and be gently introduced to the world of data science. The course builds upon the pre-requisite course listed below: the 2-credit, MSSE course entitled Computer Science in the Classroom: An Introduction to Computational Thinking. Teachers who complete this course will be better prepared to teach material covered in CSCI 108, The Joy and Beauty of Computing. Welcome!

Pre-Requisite

- The 2-credit MSSE course, Computer Science in the Classroom: An Introduction to Computational Thinking

Registration

The course is being offered through Montana State University's MSSE Program.

Materials

- Course resources are freely available online.
- If you have a laptop, it is highly recommended to bring it with you. If you don't, you are welcome to use one of the lab computers.

Time and Location

The course will meet in EPS (Engineering and Physical Sciences Building) 254 from 8:00 a.m. - 5:00 p.m. each day from Monday, July 17th through Friday, July 21st. If you are not familiar with the MSU campus, here is a map and here is a picture of the EPS building (let's hope the snow is gone!).

Syllabus

We will cover the same material that was covered in the Spring 2017 Bozeman High School offering of CSCI 108, The Joy and Beauty of Data on the following schedule. Note: Any advance preparation that you do before coming to the MSU campus will help you gain an even richer understanding of the material.

- 7/17 morning: Review Python
- 7/17 afternoon: Python Lists
- 7/18 morning: Python Files
• 7/18 afternoon: Python Dictionaries
• 7/19 morning: Object Orientation in Python
• 7/19 afternoon: Object Orientation in Python
• 7/20 morning: Scientific Computing (NumPy and SciPy modules)
• 7/20 afternoon: Manipulating Data (pandas module)
• 7/21 morning: Making Graphics (matplotlib module)
• 7/21 afternoon: Machine Learning (scikit-learn module), course survey and wrap-up

Participants

• TBA