

Teaching Programming Intro

Indiana State University

Workshop Details and Learning Outcomes

Overall Summary ISU Computer Science is offering the workshop *Teaching Programming Intro*. It will run on a Wednesday for six hours, broken into three two hour sessions. The workshop aims to both improve teacher content knowledge/skills and develop resources for pedagogy. This workshop is offered in collaboration with IndianaComputes! and the Indiana CS Higher Education Advisory board.

Attendance at each individual session will be tracked and recorded. Teachers completing three workshop sessions will be issued certificates of completion for six hours of **professional growth points**. Please contact us with any questions!

Location, Date, and Time: Online, Wednesday, June 17, 9 a.m. – 3 p.m.

Prerequisites: No previous programming or computer science experience will be assumed. Attendees will benefit from bringing a functioning laptop; this is not required. Attendees can be teachers, administrators, or others involved in K-12 education.

Facilitators: Dr. Jeff Kinne, Associate Professor of Computer Science and Mrs. Devon Kinne, Lecturer

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Overview: This workshop program aims to build basic programming skills which are needed in teaching many different computing courses in high school. The workshop is broken into three two hour sessions. Each session has two primary focuses – building programming skills, and building skills in developing assignments and assessing student work. The three sessions are – Block-Based Programming, Python Programming I, Python Programming II. The first session builds skills using the most popular in-browser programming environments that are used as first programming environments at many levels. The second two sessions build skills in the most popular first text-based programming language.

The **learning outcomes** for each session are as follows.

- *Teaching Programming: Block-based Programming*
 - Programming vocabulary – can use the correct computer science terms to describe the different components of a program.
 - Algorithm vocabulary – can use the correct computer science terms to describe algorithms.
 - Programming basics – can use each of the basic programming elements correctly in programs for a block-based in-browser programming language.
 - Classic programming tasks – can give a correct solution in a block-based in-browser programming language to a number of classic programming tasks that are often assigned to students and come up on standardized tests.
 - Programming assessment – can take a correct working program in a block-based programming language and develop an assignment and grading rubric for students based on the program.
 - State computer science standards and iLEARN – have completed activities that meet the state K-8 standards for programming and algorithms, can correctly answer iLEARN questions related to programming and algorithms.
- *Teaching Programming: Python Programming Part I*

- o Text-based programming language (Python) – can meet all of the outcomes from the first session but now for a text-based general purpose programming language (Python).
- o Text-based program debugging – can use debugging strategies in the text-based programming language, including print debugging, code path testing, and unit testing.
- o State computer science standards – have access to Indiana state standards for high school computer science courses, able to find the standards for particular courses, and have completed activities and exemplar assignments for some standards related to programming for high school courses.
- o If laptop brought – computer setup with software needed to write and debug programs.
- *Teaching Programming: Python Programming Part II*
 - o Second session – refresh/reinforce learning outcomes from second session.
 - o Programming projects – understanding of a few class projects with open-ended options for student work, and grading rubrics for the projects.
 - o Online resources – have access to online resources for programming problems/assignments and able to use the online resources.