

Instructor

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Workshop days

July 10 to July 12, 2019

Workshop hours

From 9 AM – 1 PM in Room 502 in 14 E Jackson Blvd

Prerequisites

None

Required Textbooks

None

Required Hardware and Equipment

None. All the hardware material will be provided

Cost of Attendance

None

Target Audience

High school students (age between 14 – 18 years)

Course Description

CSC 299 stresses student initiative in investigating a particular application of computing. In the process, students learn new tools (including languages and APIs), methodologies, study algorithms/code examples/formalisms used in that particular computing area, work on projects, and apply them to develop working systems.

The topic of this workshop is **Introduction to Raspberry Pi**. In this course, the students will learn the fundamentals of programming the Raspberry Pi single board computer (SBC) using the Python programming language. This workshop will cover basic concepts of electronics and the Python API for managing the general-purpose input/output (GPIO) pins of the Raspberry Pi and learn to interface with digital (switches) and analog inputs (sensors), and controlling motors (actuators). Throughout the workshop, students will work in groups to build basic cyber-physical systems (e.g., controlling LEDs and motors, monitoring the surrounding via various sensors). The students will be provided with the Python programs and schematic diagrams of the circuits to assemble. The logical flow of the programs is then explained before assembling and testing the actual circuits.

Course Objectives

In this course, students will:

- Experience working in groups
- Learn the basics of Python programming
- Understand basic electronics
- Know how to use Raspberry Pi and the basic Python API to interface inputs and outputs.
- Understand the operation of and remote control a robot rover.

Note: A certificate of successful completion is awarded at the end of the workshop if the student has

- Attended the workshop in all three days
- Actively participated in the discussions and group activities

Important:

- This is a hands-on workshop. Students are strongly advised to take part in all the discussions, circuit building, and testing.
- Students are not permitted to enter 15 minutes after days session has started.
- Use of portable electronic devices is prohibited.
- Each group has two or three members (depending on the number of students). The grouping will be done at the start of the first day. You have the option to form your own group before the beginning of the first day but subjected to the number of students. Changing groups are permitted under exceptional circumstances determined by the instructor.
- Please use the sensors, actuators and other required electronic components distributed to you for assembling and testing circuits with care.

Registration

- Deadline: Midnight, July 8, 2019
- Please fill in the forms available on the workshop webpage at <https://rome.cdm.depaul.edu/workshop-on-introduction-to-the-raspberry-pi-2019/> and email those to Isuru Godage (igodage@depaul.edu).