

# CSC 299 – 603: Sophomore Lab in Applied Computing

## Instructor

Isuru Godage, Ph.D.

**Office:** 716 CDM

**Office hours:** Tu 3:00PM-3:30PM, Th 3:00PM-4:00PM

**Phone:** 312-362-1472

**Email:** [IGODAGE@depaul.edu](mailto:IGODAGE@depaul.edu)

## Lab Hours – Section 603

Tu, Th 1:30PM – 3:00PM in Room 503 in 14 E Jackson

## Course Web Page

This syllabus, as well as the class lecture notes, homework assignments, and other links can be found on D2L. Please check the D2L news/discussion forum regularly.

## 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 particular topic of study in this section of CSC 299 is "Hardware Project for the Raspberry Pi". You will apply problem solving and programming skills toward building cyber physical systems using the Raspberry Pi hardware platform. The course will cover basic electronics and the Python API for managing hardware devices (including communication interfaces), interfacing with digital and analog inputs (sensors), controlling motors (actuators), and using output devices (displays, buzzers etc.). Throughout the course and final project, you will work in groups to build basic cyber physical systems (e.g., controlling LEDs) to moderately sophisticated ones (e.g., remotely piloting a robot over the Internet).

## Course Objectives

- Get more experience working in groups
- Improved your Python programming skills
- Be familiar with the Unix/Linux operating systems
- Be familiar with basic electronics
- Know how to use Raspberry Pi and the Python API to interface with digital/analog inputs (sensors), control motors and other hardware (actuators), and use a variety of displays (output devices).
- Build moderately sophisticated cyber physical systems using the Raspberry Pi.

## Prerequisites

You must also have taken CSC 242 or CSC 243 or an equivalent introduction to programming course. To be in this class you must have passed these courses or have been waived out of them. More to the point, you must already know how to program in Python or have sufficient programming experience so that you can learn Python quickly on your own.

You will need to bring your Raspberry Pi kit to class. If you have a laptop and can bring it to class, I encourage you to do so.

## Important:

- This is a hands-on class. Students are strongly advised to take part in all the sessions. Students are not permitted to enter 15 minutes after class has started. Use of portable electronic devices are prohibited.
- Homework can be individual or group efforts (as indicated by the instructor). In group submissions, clearly identify (percentagewise) member contributions.
- You can change groups, but it is difficult if you are the only group that needs a change in the class.
- Please use the sensors, actuators and other required electronic components distributed to you for lab assignments, with care.

## Course Format

The course provides the material you will need to understand the fundamental concepts covered during course, including:

- Follow-up lectures (twice a week)
- Weekly lab for hands-on programming and problem solving
- Resources such as recorded lecture videos, notes, and code files via D2L
- Quizzes and Peer grading assignments
- Self-Assessment resources, including lecture questions/answers, and unit quizzes/solutions, to assess your progress and understanding.

## Required Textbook

[Introduction to Computing Using Python: An Application Development Focus \(2<sup>nd</sup> Edition\)](#) by Ljubomir Perkovic, Wiley & Sons, 2015.

## Recommended Textbooks:

[Programming the Raspberry Pi, 2<sup>nd</sup> Edition: Getting Started with Python](#) by Simon Monk, McGraw-Hill Education, 2015

[Hacking Electronics: Learning Electronics with Arduino and Raspberry Pi, 2<sup>nd</sup> Edition](#) by Simon Monk, McGraw-Hill Education, 2017

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## Grading

The course grade will be apportioned as follows:

- Homework (including quizzes) 25%
- Lab Assignments 25%
- Final Project 40%
- Participation 10%

**Homework:** Homework will be distributed via D2L on most weeks and -typically consisting of reading online materials. Hard copies will not be distributed. You will need to complete this assignment prior to the next class meeting during which a short quiz, based on the assignment, will be given.

**Labs:** Each week, I will also grade your work during class (i.e., lab) time. If you do not come to class you will get 0 points for the quiz (if given) and 0 points for the lab work. You can get points back if you complete the quiz and/or the lab work at a later date, but you can do so only twice.

**Final Project:** During the last several weeks of the course, you will be working on a group project which you will present in week 9 of the class. A final project write-up will be due during exam week.

**Participation:** Your participation in the quizzes, labs, peer grading, and final project will be noted and graded out of 10% assigned for the final grade.

The grading rubric for normalized marks:

A	A-	B+	B	B-	C+
95-100	91-94	88-90	85-87	81-84	77-80
C	C-	D+	D	F	I
73-76	69-72	65-68	61-64	0-60	*

\* **Incomplete:** An incomplete grade is given only for an exceptional reason such as a death in the family, a serious illness, etc. Any such reason must be documented. Any incomplete request must be made at least two weeks before the final, and approved by the Dean of CDM. Any consequences resulting from a poor grade for the course will not be considered as valid reasons for such a request.

**To do well in this course:** To do well in this course, you should come to class regularly, participate in the discussion and lab activities, read the assigned readings each week as indicated in the homework assignments, and talk to me promptly if you have any problems.

## Policies

### Deadlines for adds, drops, and withdraws

See the deadlines in

<https://offices.depaul.edu/oa/academic-calendar/Pages/full-year-2017-2018.aspx>.

## Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

## Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in [CampusConnect](#).

## Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy, the following is an excerpt from the policy. More information can be found at <http://academicintegrity.depaul.edu/>. If you have any questions be sure to consult with me.

## Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at <http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

## Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact me in private as early as possible in the quarter (preferably within the first week of class), to discuss their specific needs, and make sure that you have contacted the [Center for Students with Disabilities \(CSD\)](#). All discussions will remain confidential.