Course and Contact Information

Course:

CS 1010 Computer Science Orientation

APSC 1001 Section 10 Engineering Orientation for Undeclared Majors

Semester: Fall 2021

Meeting time:

Friday 9:35—10:25am (Lectures), 10:40am—12:15pm and 12:35pm – 2:10pm (Laboratories)

Location of Lectures: Phillips B156

Location of Labs: Tompkins 405, 409

Instructor

Name: Prof. Kartik Bulusu

Campus Address: SEH 3640

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Office hours: TBA

Teaching Assistants

Name: Catherine Karpova

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Office hours: Tuesday 12 PM -1 PM; Thursday 1 PM – 2PM

Name: Sara Tenaglio

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Office hours: Wednesday 9 AM -10 AM; Thursday 7 PM – 8 PM

Name: Zachary Stecher

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Office hours: Tuesday 1 PM -2 PM; Thursday 1 PM – 2PM

Learning Assistants

Name: Jonathan Terry

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Course Description

This is an introductory course designed for first year engineering students majoring in computer science and those who have not chosen a major. The course will introduce the students to different majors in SEAS, to computational thinking and modeling using Python and projects using Raspberry Pi (Model: 3B+).

Course will consist of

(i)   lectures on the various engineering disciplines in SEAS,

(ii)   hands-on Python programming exercises and

(iii) hands-on exercises and in-class projects using Raspberry Pi 3B+ single-board computer.

The students will work on the following two engineering innovation projects:

(i)   Guided-python programming project and

(ii)   Will have the option of choosing a final Raspberry Pi 3B+ based project or a python programming project to address an impending need in engineering-innovation

Through the above course activities students will be exposed to computational thinking and the various engineering disciplines in SEAS. The students will also get access to a "slack-workspace" for this course, that will facilitate offline discussions among themselves and the instruction team. The students will also be provided video lectures and video summaries whenever possible made available on the course webpage and / or blackboard.

Prerequisites: None

Required Text(s): None
Learning Outcomes:
As a result of completing this course, students will be able to:
1. Understand the different majors offered in SEAS.
2. Perform experiments aimed at collecting and analyzing data.
3. Design and write Python programs.
4. Work on an engineering-innovation group project.

ABET Learning Outcomes:
a *an ability to apply knowledge of mathematics, science and engineering*
b *an ability to design and conduct experiments, as well as to analyze and interpret data*
e *an ability to identify, formulate, and solve engineering problems*
k *an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.*

Class Schedule [week-by-week]

Date	Topic(s) and readings	Hands-on work and Assignment(s) due
Week 1 [09/24/2021]	Introduction to APSC1001; Introduction to Raspberry Pi and Python programming	Python programming using DeepNote; Intro to Group and Guided-Projects; In-class Raspberry Pi Lab (Blinking LEDs)
Week 2 [10/01/2021]	Electrical and Computer Engineering; Python programming	Handling data arrays and plotting data using Python; In-class Raspberry Pi Lab (Ultrasonic cacophony); Student group formation; **HW 1 due**
Week 3 [10/08/2021]	Biomedical Engineering (tentative)	Working with Pandas; Python Guided-project; In-class Raspberry Pi Lab on Heart rate measurements; **HW 2 due**
Week 4 [10/15/2021]	Civil Engineering (tentative)	Working with loops in Python; In-class Raspberry Pi Lab using senseHats; Getting involved in student orgs; **HW 3 due**
Week 5 [10/22/2021]	**Fall Break** **No class this week**	
Week 6 [10/29/2021]	Computer science	In-class Raspberry Pi Lab on Image Encryption and Decryption / activities; **Python Guided-Project due**
Week 7 [11/05/2021]	Mechanical Engineering	In-class Raspberry Pi Lab on Data acquisition in Mechanical systems; **HW 4 due**
Week 8 [11/12/2021]	Systems Engineering	In-class Lab using VENSIM simulation software; Choropleths in Python; **HW 5 due**
Week 9 [11/19/2021]	Parallel Student Panels; Final Project Presentations Review; Monday after this course !	
NOTE: In accordance with university policy, the final exams will be given during the final exam period and not the last week of the semester		

Time Requirements and Expectations

This course will have 50 minutes of lecture time per week, approximately 90 minutes of laboratory, review, and discussion per week, and will require 2 hours per week on average for homework assignments.

Assignments and Grades

Grading

List of what will be counted and percentages. For example:

- In-class work and Weekly Quizzes 10%
- Python programming and other Homework 30%
- Projects 60%
- There is no required final exam.

University Policies

Use of Electronic Course Materials and Class Recordings

Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct. Please contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. Please contact Disability Support Services if you have questions or need assistance in accessing electronic course materials.

University Policy on Religious Holidays

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.
3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities.
   For details and policy, see "Religious Holidays" at https://provost.gwu.edu/policies-procedures-and-guidelines

Support for Students Outside the Classroom

Disability Support Services (DSS)

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: https://disabilitysupport.gwu.edu/

Mental Health Services 202-994-5300
The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations confidential assessment, counseling services (individual and small group), and referrals.
https://healthcenter.gwu.edu/counseling-and-psychological-services

Academic Integrity Code

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. You are not allowed to collaborate on the home works and lab assignments; for programming projects and hardware lab assignments, you can work in teams only if they are designated as team projects (labs). Unless otherwise specified, you cannot search for solutions or code on the web – but you can use any code that is included in the textbook or lecture notes (but please cite them). I will be using a SW tool that checks for program code similarities – any pair of programs with greater than 25% similarity will be closely examined.

The Office of Academic Integrity maintains a permanent record of the violation. More information is available from the Office of Academic Integrity at https://studentconduct.gwu.edu/academic-integrity. The University's "Guide of Academic Integrity in Online Learning Environments" is available at https://studentconduct.gwu.edu/guide-academic-integrity-online-learning-environments. Contact information: rights@gwu.edu or 202-994-6757.