Course and Contact Information

Course: CS 1010 Computer Science Orientation

Semester: Fall 2022

Meeting times: Friday 9:35—10:25am (Lectures); 10:40am—12:15pm (Laboratory Section-30) and 12:45pm – 2:10pm (Laboratory Section-31)

Location of Lectures: MPA B07

Location of Labs: SEH 1300, 1400, 1450

Course website: https://gwu-csci1010.github.io/index

Instructor

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Course Description

This is an introductory course designed for first year engineering students majoring in computer science. The course will introduce the students to basics, emerging concepts, and applications of Computer Science, to computing and modeling using Python and projects using Raspberry Pi (Model: 3B+).

Course will consist of

(i) lectures on the basics and emerging concepts in Computer Science,
(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 computing, technical resources and presentations on various aspects in the field of computer science. The students will 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 lecture presentations and video summaries whenever possible and 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 various areas of work and research in Computer Science.
2. Perform experiments aimed at collecting and analyzing data.
3. Design and write Python programs.
4. Work on an engineering-innovation group project.

Additional Learning Outcomes:

a an ability to apply knowledge of mathematics, computer 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 computing tools necessary for practice of computer science.

Class Schedule [week-by-week]

Date	Topic(s) and readings	Hands-on work and Assignment(s) due
Week 1 [10/14/2022]	• Overview of CS1010 by **Prof. Kartik Bulusu** • Introduction to Computer Science Department by **Prof. Robert Pless** • Introduction to Raspberry Pi and Python programming by **Prof. Kartik Bulusu**	Python programming using DeepNote; Intro to Group and Guided-Projects; In-class Raspberry Pi Lab (Blinking LEDs); **Working Style Workout survey**
Week 2 [10/21/2022]	• Electronic Voting by **Prof. Poorvi Vora** • Introduction to Augmented and Virtual Reality Technologies by **Prof. Hurriyet Ok**	Handling data arrays and plotting data using Python; In-class Raspberry Pi Lab (Ultrasonic cacophony); Student group formation; **HW 1 due**

[10/22/2022]	**Guided-Python Project on COVID-19 Data Analysis is released** NOTE: This group project is due on 10/28/2022 by 11:59 PM	
10/24/2022 to 10/25/2022	**Fall Break** **No class this week**	
Week 3 [10/28/2022]	• Cryptography and Secure Computation **by Prof. Arkady Yerukhimovich** • Cloud Computing by **Prof. Tim Wood**	Working with Pandas; Python Guided-project; In-class Raspberry Pi Lab on Heart rate measurements; **HW 2 due**
[10/28/2022]	**Guided-Python Project on COVID-19 Data Analysis is due by 11:59 PM** **NOTE: This group project accounts for 30% of the final grade**	
Week 4 [11/04/2022]	• Computer Vision by **Prof. Robert Pless** • Natural Language Processing by **Prof. Kinga Dobolyi**	Working with loops in Python; In-class Raspberry Pi Lab using senseHats; **HW 3 due**
Week 5 [11/11/2022]	• Machine learning - NLP by **Richard Sear (CS Alumni and ML researcher)** • Information privacy / Image encryption-decryption **by Prof. Bhagirath Narahari (tentative)**	In-class Raspberry Pi Lab on Image Encryption and Decryption / activities; **Python Guided-Project due**
[11/11/2022]	**Final Raspberry Pi / Python group projects are announced. Student groups are asked to indicate their three choices by 11:59 PM**	
Week 6 [11/18/2021]	• Secure for Autonomous Systems by **Prof. Sibin Mohan** • Computer Graphics by **Prof. James Hahn**	In-class Raspberry Pi Lab; **HW 4 due**
Week 7 [11/25/2022]	**Thanksgiving Break** **No class this week**	
Week 8 [12/02/2022]	Advising computer science students by **Prof. Poorvi Vora and Prof. Hyeong-Ah Choi**	Getting involved in student orgs; Choropleths in Python; **HW 5 due**
[12/05/2022]	**Final Raspberry Pi / Python group projects are due by 11:59 PM using the google form provided.** **NOTE: This group project accounts for 30% of the final grade**	
Week 9 [12/09/2022]	Student and Alumni Panel; 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.

Classroom Policies and Student responsibilities

This course requires a combination of individual and group work entailing hands-on activities and frequent interactions with the instructional team. The lectures, labs and office hours are available for interacting with your group and the instruction team. In addition, a course messaging platform (Slack) is made available for the students to interact in groups and with the instruction team asynchronously. We ask that all students adhere to the course policies throughout the duration of the semester.

- Be respectful: Listen to the instructors. Keep an open mind to the course material presented. Limit the use of personal devices. Be aware that you are working in a group.
- Be responsible: Arrive on time. Submit the course deliverables on time. Help your team members
- Be a communicator: Observe, Ask questions and Try out the materials presented during the course. Communicate with your team effectively and politely.
- Be a problem solver: Explore options to complete hands-on tasks. Make your own notes. Stay positive about the course outcomes.

Justice, Equity, Diversity, Inclusion (JEDI) statement

The instruction team intends to students from **all** diverse backgrounds and perspectives by this course, The diversity that the students bring to this class be viewed as a resource, strength, and benefit. The course materials and activities presented in this course are intended to be respectful of: age, race, ethnicity, country of origin, language, religion, spiritual practice, sexual orientation, gender identity or expression, introversion/extroversion personality dimensions, and socioeconomic and mental/physical status. Please let the main instructor know ways to improve the effectiveness of the course. See JEDI resources for student resources.

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.