CS 103 Computer Science with Business Problems
Course Syllabus for Fall 2023

Instructor: Akm Islam
Thursday: 4.30pm - 5.10pm
Wednesday: 10am - 10.40am (Online - Webex Link)
If these hours do not work with your schedule, appointments are also available by email.
Location: GITC 5714

Course Description
An introduction to programming and problem-solving skills using Python, a very high-level language. Topics include:

- programming environments and tools, including editor and debugger
- basic strategies for problem solving
- integer, floating point, string, and logical data types
- lists, sets and dictionaries
- files
- conditional, repetition, function and other constructs that control the flow of execution of a program
- the use of high-level data types such as lists, strings and dictionaries in problem representation.
- Applications of python in AI and machine learning.

Course Resources
There is no specific textbook required for this course. However, the majority of the materials will come from the following books, and you are highly advised to read the selected chapters of the books along with the lecture notes:

- *Think Python* by Allen B. Downey
- Starting Out with Python by Tonny Gaddis (any edition)
- Python for Data Analysis (2nd Edition) by Wes McKinney - GitHub Repository

Class Attendance
Class attendance is mandatory. Getting to class late or leaving early counts as absence. If you are unable to attend for some valid reasons, you must submit proper documentation to the dean of students. You will be excused once they deem the reason as valid. Students who miss more than 3 classes (unexcused) will have their grade reduced by a letter grade.

Assignments
Assignments must be submitted through Canvas by the due date. It will not be accepted late except for special circumstances (such as jury duty or medical problem), for which you have to provide documentation to the dean of students office, and they must approve it.

Quizzes
Quizzes will be given to test fundamental concepts. There will be two types of quizzes: regular quizzes and pop quizzes. Pop quizzes will be given at the beginning of the class or at the end of the class. If it's at the beginning of the class, you will be tested on the materials of the previous lecture; and if it's at the end of the class, it will be based on the lecture on that day.

Project
There will be a project in this course. Students will work in groups and present their works in the class. The project requirements will be discussed in class and will be posted on canvas.

Exams
There are two exams in this course - Midterm and Final. You must bring ID to all exams. Students with special needs are advised to make arrangements with the Office of Accessibility Resources and Services. There are no makeup exams. If you miss an exam because of a documented special circumstance, you may receive a grade based on the other exam or based on the average performance on the other parts of the course.

Class Participation
Asking and answering questions, taking quizzes, solving problems — individually or in groups — is a regular part of class meetings. Cell phones must be turned off during class. During class time you may not play games, text, email, browse the web or engage in other activities that are not part of the class. Any violation will be reported to the dean of students office.

Course Communication
Canvas (canvas.njit.edu) will be used to post lecture notes and to submit homeworks. For any other communications, we will use **Discord**. You will receive the invitation to join the discord server as soon as the semester starts. It is highly recommended that you install discord on your phone for easy access. Extra credit assignments will only be announced on discord.

What You Will Learn
By the end of this course, you will be able to:

- Devise a problem representation (model) and a sequence of steps (algorithm) that correctly solve the problem posed
- Write a program that implements the algorithm, using
  - A core set of Python language elements (keywords, syntax, variables, modules)
  - Basic data types (integers, floats, strings, booleans, lists, tuples, dictionaries) and operations on them
  - Statements that perform console/file input and output
  - Statements that control the sequence of execution (if/else, for, while)
  - Statements that are structured into function calls
- Do analysis on data and generate visualizations

Topics to Be Covered
The list of topics to be covered includes the following:

- Getting Started with Python
- Expressions, Variables, and Assignments
- Built-in Data Types
- Sequence Data Types (Strings, Tuples, and Lists)
- Python Standard Library
- Conditional Execution and Boolean Logic
- Iteration
- Functions
- Argument-Passing and Return Values
- Data files
- Dictionaries
- Scope and Namespaces
- Exceptions
- Debugging and Testing
- Data analysis and visualization

Overall Course Score Formula

Attendance	10%
Assignment	15%
Quiz	15%
Project	10%
Midterm Exam	20%
Final Exam	30%

The letter grade is based on the overall course score.

Grade Formula						
Grade	**A**	**B+**	**B**	**C+**	**C**	**D**
Overall Course Score Cutoff	90	85	80	75	70	60

Grade Appeals

If you believe that you deserve more credit than you have been awarded on a particular problem, you may request, **at the time it is returned or within 48 hours of the grade being posted**, that it be re-graded. Your entire assignment will be re-graded, which may result in points being **added or subtracted.**

University Code on Academic Integrity

Read the University Code on Academic Integrity (njit.edu/policies/sites/policies/files/academic-integrity-code.pdf). It describes infractions of academic integrity and penalties for violations, including, for the most serious violations, an XF grade in the course or expulsion. **All work that you represent as your own must, in fact, be your own.** Work done by others must be given proper credit.

I reserve the right to make small changes to this syllabus; if there is any modification, you will be informed during the semester.