New Jersey Institute of Technology

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Fall 2024

CS 103-001, 003: Computer Science with Business Problems

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Course Description
An introductory course in computer science and problem-solving skills using Python, a very high-level language. Topics include:
- programming environments and tools, including editor
- 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.

Learning this material requires extensive hands-on practice. You should plan to spend twice as much time studying and working problems outside of class (that is, about 6 hours a week) as you do in class.

Course Resources
The textbook is *Think Python* by Allen B. Downey, 2nd edition. This is an open source book. It is available without charge in HTML and PDF formats at http://greenteapress.com/wp/think-python-2e/.

A print format is published by O'Reilly (campus bookstore or online). There is also a Kindle edition. The textbook is required. You may use any one (or more) of the formats.

Other course materials:
- Python language version 3.11.5 can be gotten at python.org/downloads. This includes the IDLE development environment, help files, modules and other parts of the standard distribution. You will need to get Python and install it on your personal desktop and/or laptop computer. You can download Python for Windows, Mac or Linux environments. There is no charge for Python.
- PythonTutor, a program for stepping through and visualizing the execution of Python code at pythontutor.com.
- Wingware 101 IDE, which can be downloaded for various platforms at wingware.com/downloads/wingide-101.
- Thonny IDE, downloadable from thonny.org.
- The Community Edition of the PyCharm IDE jetbrains.com/pycharm.
- The Mu development environment, available at codewith.mu and various other online resources.

Class Attendance
Class attendance is mandatory. A student who misses more than five classes will be dropped, without credit. Getting to class late or leaving early counts as half an absence.

Recitation
Attending recitation is an important checkpoint in assuring your grasp of the material being covered and correctly solving assigned problems. When you go for recitation you should have already read the assigned material and worked on current homework. In recitation, you should be prepared to ask the questions you have identified that need clarification. This will check whether your understanding of this material is correct. If you have any doubts meet me during office hours, I have posted office hours.

Homework

Homework must be submitted through Canvas (and when specified in hard copy) by the beginning of class on the due date. It will not be accepted late except for special circumstances (such as jury duty or medical problem), for which you must provide documentation.

A homework assignment will typically require you to write code that produces a specified output. No credit will be given for code that does not run. Getting a correct solution will often require that your solution be written, tested, and then rewritten multiple times until it fulfills the specification. Expect that the bulk of your time will be spent getting it right. Remember: only code that is correct is worth anything. During the write-test-debug cycle you may — and are encouraged to — use the debugging facilities in the development environment, pose questions on Canvas, and discuss the problem with others.

Class Participation
Presenting your answers in class is a regular part of the course. Asking and answering questions, taking quizzes, solving programming 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.

Course Communication

Canvas (canvas.njit.edu) will be used to post lecture notes, to submit homework and for course discussion. You may also email instructor and classroom assistants.

Generative AI

This course expects students to work without artificial intelligence (AI) assistance in order to better develop their skills in this content area. As such, AI usage is not permitted throughout this course under any circumstance.

Collaboration and Individual Responsibility
You are encouraged to study and to work on assignments together with others; collaboration is a basic learning technique. You may not take credit for the work of others. You must understand and be able to explain all work that you submit.

What You Will Learn
By the end of this course, you will be expected to know and be able to use these pieces

- 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

Each homework assignment gives you practice on these concepts and skills, and provides feedback on your progress. You are expected to submit working solutions to every homework assignment. Each element of this course builds on previous material, and any gaps in your understanding will compromise your ability to successfully complete the course. You understand material when you are able to use it to solve problems and to explain your solutions. The midterm exam and the final exam test your mastery of the material.

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
- Formatted Output and User Input
- Conditional Execution and Boolean Logic
- Iteration
- Functions
- Argument-Passing and Return Values
- Data files
- Dictionaries
- Scope and Namespaces
- Exceptions

Overall Course Score Formula

Homework	20%
Attendance	5%
Midterm	25%
Final Exam	35%
Quiz.	12%
Discretionary	3%

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

Common Exams
The midterm exam will take place on **Oct 30, 2024**. The final exams period is **December 15-21**. The CS103 final exam will be during this period, but the date has not yet been set. *Be sure that you will be present for all of your exams*.

You must bring ID to all exams. Students with special needs are advised to make arrangements with the Office of Accessibility Resources and Services, Kupfrian Hall 201.

There are no makeup exams. If you miss a midterm because of a documented special circumstance, you may receive an imputed grade based on the other HW and the final exam.

Grade Appeals
If you believe that you deserve more credit than you have been awarded on a particular common exam problem, you may request, **at the time the exam is returned**, that it be regraded. Your entire exam will be regraded, which may result in points being added or subtracted.

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

Academic Integrity:

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: NJIT Academic Integrity Code.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"

You will be informed of any modifications of this syllabus during the semester.