The Hong Kong University of Science and Technology

UG Course Syllabus (Fall 2025-26)

[Course Title] Introduction to Python Programming

[Course Code] COMP 1023

[No. of Credits] 3 credits

[Any pre-/co-requisites] Nil

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Course Description

This introductory course is designed to provide a comprehensive overview of the Python programming language and its core concepts, such as data types, variables, operators, and control structures, as well as the collection data types, including lists, tuples, sets, and dictionaries. Additionally, it covers the language's functions and the fundamentals of object-oriented programming. The course also explores a range of useful Python modules and packages, such as NumPy, Pandas, Matplotlib, through meaningful examples and applications, as well as hands-on experimentation using a well-known integrated development environment and AI tools. Furthermore, this course will discuss good programming practices and debugging skills.

List of Topics

1. Introduction to Computers and Programming
2. Python Programming Fundamentals
3. Branching Statements
4. Looping Statements
5. Collections – container data types
6. Modularization – Functions and Recursions
7. Modularization - Modules, Packages, and Libraries
8. Object-Oriented Programming
9. NumPy, Pandas and Matplotlib

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Implement solutions to simple problems by writing well-structured Python programs leveraging fundamental programming constructs
2. Develop modular, reusable Python programs through the effective use of functions and modules
3. Understand the core principles of object-oriented programming to create robust, maintainable Python applications
4. Analyze and visualize data using appropriate libraries and tools
5. Write Python code that adheres to industry-standard best practices for coding style and documentation

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessment Task	Contribution to Overall Course grade (%)
Laboratory exercises	10%
Programming assignments	25%
Midterm examination	25%
Final examination	40%

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Tentative Due date
Lab 2#	2.5%	27/09/2025*
Lab 4#	2.5%	11/10/2025*
Lab 6#	2.5%	22/10/2025*
Lab 7#	2.5%	08/11/2025*
Lab 9#	2.5%	21/11/2025*
Programming assignment 1	12%	18/10/2025*
Programming assignment 2	13%	29/11/2025*
Midterm examination	25%	
Final examination	40%	

*Assessment marks for individual assessed tasks will be released within two weeks of the due date. #10 labs are given, but only the 5 labs are required to be submitted and graded. Additionally, only the best 4 labs are counted towards the final grade.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Lab 2	ILO1, ILO5	The labs and programming assignments assess students' ability to implement solutions to simple problems by writing programs using fundamental programming constructs in Python (ILO1), develop modular and reusable Python programs through the use of functions and modules (ILO2), create robust and maintainable Python applications using object-oriented programming concepts (ILO3), analyze and visualize data using Python libraries and tools (ILO4), as well as writing Python code that adheres to industry-standard best practices (ILO5).
Lab 4	ILO1, ILO5	
Lab 6	ILO1, ILO2, ILO5	
Lab 7	ILO1, ILO2, ILO5	
Lab 9	ILO1, ILO2, ILO3, ILO4, ILO5	
Programming assignment 1	ILO1, ILO2, ILO5	
Programming assignment 2	ILO1, ILO2, ILO3, ILO4, ILO5	

Midterm examination	ILO1, ILO2	The exams assess students' ability to implement solutions to simple problems by writing programs using fundamental programming constructors in Python (ILO1), to develop modular and reusable Python programs using functions and modules (ILO2), to create robust and maintainable Python applications using object-oriented programming concepts (ILO3), and to analyze and visualize data using Python libraries and tools (ILO4).
Final examination	ILO1, ILO2, ILO3, ILO4	

Grading Rubrics

Detailed rubrics for each assignment will be provided. These rubrics clearly outline the criteria used for evaluation. Students can refer to these rubrics to understand how their work will be assessed.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.

Course AI Policy

Generative artificial intelligence tools like ChatGPT or similar software are prohibited for all labs and assignments to facilitate reliable assessment of students' learning outcomes.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include [specific details, e.g., strengths, areas for improvement]. Students who have further questions about the feedback, including marks, should consult the instructor within five working days after the feedback is received.

Resubmission Policy

Students are not allowed to turn in their work again after the deadline.

Required Texts and Materials

- Y. Liang. Introduction to Python Programming and Data Structures. Pearson (3rd Edition). 2022.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Additional Resources

Reference Books

- Paul Deitel and Harvey Deitel. **Introduction to Python for Computer Science and Data Science:** Learning to Program with AI, Big Data and The Cloud. Pearson. 2019.
- Cuantum Technologies. **Python Programming Unlocked for Beginners**: Ultimate Guide to Learn Python Basics: Python Coding Fundamentals, and Python Step by Step for Absolute Beginners. Independently Published. 2023.
- Larry Loopwell. Python Primer: **A Comprehensive Guide to Python Programming for Beginners**: An Exciting, Structured Learning Path, Deep Dive into Concepts and a Great Resource to Python Programming. Independently Published. 2023.
- Christina Daniel. **Python Programming Made Simple**: Learn Progressively with Self-Contained Code. Independently Published. 2024.
- Wes McKinney. **Python for Data Analysis**: Data Wrangling with Pandas, NumPy, and Jupyter. O'Reilly Media (3rd Edition). 2022.