

Punjab University College of Information Technology (PUCIT)

University of the Punjab

Programming Fundamentals – Fall 2023

(BSDS F21 M&A Sections)

Google Classroom

mps3se3

Course code CC-102

Credit hours 3

Prerequisite Nil (but Enthusiasm, Consistency and Honesty)

Follow up CMP-201 Object Oriented Programming

Course Instructor Muhammad Idrees

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[||printsrv\Faculty Data\Muhammad Idrees\PF Fall 23 \(BSDSF23\)](||printsrv\Faculty Data\Muhammad Idrees\PF Fall 23 (BSDSF23))

Office hours: Tuesday/Thursday (11:30am to 12:15pm)

Tuesday/Thursday (01:15pm to 02:00pm)

Any other time (working day) upon permission through email

Course Objectives

- To introduce what computer programs are, how an existing program behaves.
- To develop the skills building in Python/C++ programming.
- To translate their program logic (basic pseudo-code/flow-charts) into some programming language that computer can understand so that they can get real feel of their efforts.
- To introduce how to edit/update existing programs and how to build relatively large programs.
- To basic principles of attacking a problem, a bit of performance factor and some basic structured design principles.

Textbooks

- Tony Gaddis, *Starting out with Python*, 5th Ed., Addison-Wesley.
- John V. Guttag, *Introduction to Computation and Programming Using Python (with Application to Understanding Data)*, 2nd Ed., The MIT Press

Reference Books/Websites

- <https://www.programiz.com/python-programming>
- <https://www.youtube.com/playlist?list=PLi01XoE8jYohWFPpC17Z-wWhPOSuh8Er->

C/CPP Books/Websites for further references

- John R. Hubbard, *Schaum's Programming with C++*, 2nd Edition, McGRAW HILL.
- Tony Gaddis, *Starting out with C++: from control structures through objects*, 7th Ed., Addison-Wesley.
- D.S. Malik, *C++ Programming, From Problem Analysis to Program, Design*, 5th Ed.
- <http://www.learncpp.com/>.
- <https://www.youtube.com/playlist?list=PLAE85DE8440AA6B83>

Grading Instruments (Sessional decomposition may vary at end of course)

5 to 8 marks for	Quizzes, planned/announced or sudden
10 to 15 marks for	Programming assignments
2 to 3 marks for	Written assignments
Up-to 5 marks for	Term project / technical report
35 marks for	Midterm exam/pre-mid lecture notes
40 marks for	Final exam/post-mid lecture notes

Passing Criteria

- As per college rules, minimum requirement to pass this course is to get overall 50% marks.

Tentative Course Outline and Lecture Plan

Topics	No. of Lectures
Introduction of Course, Introduction to Python, CMD vs IDE, Output in brief, Hello World, (bool, int, float, and string, ...) objects in Python	1
Constants, Variables, Identifiers, Operators, Functions, and Expressions Simple UDTs: enumerations and structures, Intro of advanced types	2
Input in brief, Assignment operation, Type Casting functions, further discussion of operators (arithmetic, relational, logical, concatenation, ...)	2
Selection; if, if else, if elif ... else, single line if else	1
Iterations; while and for, range type,	2
Functions: define and calling functions, formal and actual parameter, call by value and call by reference, local and global variables, SCOPE and LIFETIME	2
Lists as Arrays; Homogenous and Heterogeneous lists; Nested Lists Passing lists to functions, returning lists	1
Exception handling	1
Combining learned concepts to develop relatively big programs	4
MIDTERM EXAM	
Strings in details; String operations	1
Mutable and Immutable types; Introduction to Lists, Tuples and Sets; Object <i>aliasing</i> ; Shallow vs Deep copy	1
Introduction to Modules; Modules, creating and using modules, python standard modules (libraries);	1
Multidimensional arrays; Formatted input/output, I/O in detail/depth	3
Text files handling; Binary file handling; Intro to Image handling (PIL);	4
Intro to Arrays in Python, arrays vs Lists, ctype & ctype arrays, numpy arrays	1
First class object, Passing and returning functions, callbacks; Anonymous (lambda) functions; Namespaces, global, local, nonlocal; Date and Time; sqlite3	1
List, Tuples, Sets, and Dictionaries; iterators and iterables;	2
Missed simple topics: keywords, break, as, del, with, yield, for/for else, = if else	1
Misc topics: recursion, backtracking, graphs, use of stack/queue, sockets, threads, Object Oriented Programming, Introduction to CPP	1+?
FINAL EXAM	

Important Notes

- Academic integrity is expected of all students. Plagiarism or cheating in any assessment will result in at least an **F** grade in the course, and possibly more severe penalties.
- You bear all the responsibility for protecting your assignments from plagiarism. If anyone else submits your assignment or uses your code in his/her assignment, you will be considered equally responsible.
- The instructor reserves the right to modify the grading scheme/marks division and course outline during the semester.
- All code written in quizzes, assignments, homework's, and exams must be in **Python**. Code must be intelligently documented (commented). Undocumented code may not be given any credit.
- You **may** use Geany or PyCharm or IDLE with NotePad++ writing your code OR choose one of your own choice.
- There is no makeup for a missed sessional grading instruments like quizzes, assignments, and home works.