CS118 – Programming Fundamentals

Fall 2020 - Course Outline

Course Code:	CS118
Course Title:	Programming Fundamentals
Batch:	BS-20
Credits:	3
Instructor:	Waqas Ali
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1. Objectives

In the this course the student will be introduced to the field of computer science. The student will gain essential knowledge and will learn programming concepts with particular attention to solving real world problems. In this course the student will acquire skills in problem analysis, solution design and program construction.

2. Textbook

Guttag, John V. Introduction to computation and programming using Python.

3. Reference Material

- Abelson, Harold, Gerald Jay Sussman, and Julie Sussman. Structure and interpretation of computer programs. Justin Kelly, 1996.
- Knuth, Donald. The Art of Programming. Addison-Wesley. 1968.
- Website: composingprograms.com

4. Grade Distribution

Assignments:	7%
Quizzes:	3%
Project:	10%
Sessional Exams:	30%
Final Exam	50%

5. Course Policies

Attendance:	All students are required to maintain at least 80% attendance in the course, failing to do so will result in an 'FA' grade.
Quizzes:	Quizzes will mostly be closed book. Quiz will be announced a day or two in advance, but unannounced quizzes are also possible.

Semester Project:	Each student will be asked to submit and present a semester project.
Marks Contest Deadlines:	The mark contest deadline for any assessment is 3 days after the marks are announced. No changes will be entertained after that.
Plagiarism Policy:	Cheating, Copying or any form of academic dishonesty is expressly forbidden in this class, and by the university's Policy on Academic Integrity. Any form of cheating will immediately earn you zero marks in that assessment.
Reading Tasks:	Reading tasks may be assigned each week. Quizzes will mostly be on reading tasks. Students may also be assigned presentations on relevant topics.

6. Course Organization

This is subject to change during the semester

Week	**Topics**
Week 1	Course orientation, introduction and motivation
Week 2	Problem Solving Intro to CS program courses
Week 3	Operating systems; cloud computing; containers; web services
Week 4	Introduction to programming. Case study: Newton's square root method
Week 5	Elements of programming
Week 6	Control structures
Week 7	Arrays, lists, dictionaries
Week 8	Defining new data types; basics of abstraction
Week 9	Defining new functions Lexical scopes Recursion
Week 10	File handling Exceptions
Week 11	Data abstractions, sequences, mutable data
Week 12	Object abstractions Handling problems
Week 13	Static data types Pointers Memory management basics
Week 14	Low-level details of function parameters; passing by value and by reference Higher order functions
Week 15	*Project Presentations*