COMSATS University Islamabad
Department of Computer Science
Syllabus Fall/Spring_____

I.   Course code and Title

CSC101	INTRODUCTION TO ICT

II.   Course Prerequisites

Course Code	Title
None	

III.   Instructor's Information

Full Name:	
Email:	
Contact Number	
Office Hours & Location	
Teaching Assistant (if any)	

IV.   Course Composition

	Credit Hours	Weekly	Duration (hrs)	Contact Hours
Lectures	2	2	1.0	2.0
Laboratories	1	1	3.0	3.0

V.   Course Description

This course covers the basics of Information and Communications Technologies. The main topics covered in this course are as follows -What is ICT; Computing Model: Turing Model, Von Neumann Model; Microcomputer Processor and its Machine Cycle; The Parts of Computer Hardware; Computer Systems & Components; Storage Devices; Number Systems; Computer Codes; Computer Software: System Software, Application Software; Operating Systems; Introduction to Databases and Information Systems; Computer Networks and Internet; Security: Confidentiality, Firewalls, Other Aspects of Security; Future trends in ICT: Cloud computing, IoT, Virtual Reality, Augmented Reality; General Problem Solving Concepts: Types of Problems; The problem-solving process; Algorithm Representation: Pseudocodes; Flowcharts; Problem Solving with Sequential structure; Problem Solving with decision Structure; Problem solving with repetition structure; Problem solving with functions; Program Development Lifecycle; Introduction to Python; Data Types; Variables and Expression; Elementary Programming; Control Structures; Loops; Functions in Python.

VI.   Text book

1.	Understanding Computers: Today and Tomorrow, Comprehensive., Deborah Morley and Charles S. Parker 16th Edition, Cengage Learning, 2017.
2.	Practical Programming (in Python) Jeffrey Elkner, Allen B. Downey, 2016.

VII.   Reference books& Material

1.	Foundations of Computer Science, Behrouz Forouzan. McGraw-Hill, 2017.
2.	Problem Solving & Programming; Maureen Sprankle, Jim Hubbard, Prentice Hall, 2012.
3.	Computer Fundamentals, Priti Sinha Pradeep K.Sinha, BPB PUBLICATIONS,2003.
4.	Starting Out With Python, Tony Gaddis, Addison-Wesley, 2016

VIII.   Course Assessment

Evaluation methods	Theory Weight (%)[T]	Lab Weight(%)[L]
Quizzes	15	-
Assignments	10	25
Mid Term	25	25
Terminal Exam	50	50
Total	100	100
Total =T+L	**T=(T/100)*67**	**L=(L/100)*33**

IX.   Course Outline and Contents

Lecture	CDF Unit #	Topics Covered	Textbook Section
1.	1	Basic definition of information technology (IT), computer technology and communications technology, Role of IT in society, History of computer, categories of computers The parts of computer system: hardware, software, data, users.	Morley:Ch1,
2.	1	Information processing cycle, Input devices: keyboard, mouse, pens, touch screen, game controllers, optical input devices, audio visual devices Output devices: monitors and its types, headphones, printers and its types	Morley:Ch4
3	1	How computer process data; Central processing unit: control unit, arithmetic logic unit; Memory: volatile and non-volatile, flash memory, Registers; Cache memory Bus and its types, Ports	Morley: Ch2
4	2	How computer represent data: number systems, bits and bytes, text codes; Introduction to number system	Norton: Ch4
5	1	Storage devices: magnetic storage devices, optical storage devices and their types, how data stored in magnetic and optical storage; solid state storage devices,	Morley: Ch3

6.	3	Operating System (OS): Basic purpose of OS, Types of OS, Operating System Function: providing user interface, Running programs, Managing hardware, Utility programs, PC operating system, Network operating system, Embedded operating system; Application software, Acquiring software: Commercial software, Freeware and public domain software, open source software;	Morley: Ch5 Morley: Ch6
7	3	Database: how data is organized, the key field, types of files; Database management system(DBMS): benefits of DBMS, three database components, database administrator;	Morley: Ch12
8	3	The uses of networks; Types of networks: local area network, wide area network; Hybrid networks: campus area network, metropolitan area network, home area network, intranet and extranet	Morley: Ch7
9	3	How network are structured: client-server networks, server based networks, peer to peer networks, Network topologies and protocols; network media: wired and wireless; network hardware	Morley: Ch7
10	3	Need for computer security, Basic security concepts: Threats to user: Identity theft, loss of privacy, online spying tools, spam, computer related injuries, Threats to hardware: power related threats, theft and vandalism, natural disasters; Threats to data: Malware, virus and malicious program; cybercrime, cyber-terrorism; Counter measures.	Morley: Ch9
11	3	Future trends in ICT: Cloud computing, IoT, Virtual Reality, Augmented Reality; The applications of ICT	Reference Material
12	4	General Problem-Solving Concepts: Types of Problems; Problem Solving with Sequential structure; Discussion/Practice with Pseudocodes; Flowcharts	Sprankle: Ch:1,2,5
13	4	Problem Solving with decision Structure; Discussion/Practice with Pseudocodes; Flowcharts	Sprankle: Ch6
14	4	Problem solving with repetition structure; Discussion/Practice with Pseudocodes; Flowcharts	Sprankle: Ch7
15	4	Problem solving with functions; Discussion/Practice with Pseudocodes; Flowcharts	Sprankle: Ch
16		**Mid Term**	
17	5	What is computer program, Introduction to Python, indentation, control structures, built-in functions, The first python program.	Python Practical ProgrammingCh2
18	5	Values and Variables: Integer Values, Variables and Assignment, Identifiers, Floating-point Types, User Input, the eval function, controlling the print function.	Python Practical ProgrammingCh2

		Difference between Expressions and Statements in Python, Operators and operands; arithmetic and bitwise operations	Python Practical ProgrammingCh5
19	5	Difference between Expressions and Statements in Python, Operators and operands; arithmetic and bitwise operations	Python Practical ProgrammingCh5
20	5	Variable comparison, logical and Boolean operations, conditional statements, operator preference	Python Practical ProgrammingCh5
21	5	Nested Conditionals , Multi-way Decision Statements, Conditional Expressions, Errors in Conditional Statements, Else-if statement vs. if-if statement	Python Practical ProgrammingCh5
22	5	Strings, Control Codes within Strings, Slicing and Indexing Strings, Concatenation, Using arithmetic operators with Strings (Operator Overloading), the in operator	Python Practical ProgrammingCh10
23	5	Lists; List Assignment and Equivalence, List Bounds, Slicing, Operator Overloading with Lists,	Python Practical ProgrammingCh13
24	5	While loop, Conditionals within a loop, Counting using a While loop, break and continue statements, Iterating list using a while loop	ProgrammingCh8,Ch10
25	5	Nesting while Loops	Python Practical ProgrammingCh10
26	5	For loop, the in operator with for loop, Iterating lists using for loop	Python Practical ProgrammingCh10
27	6	Functions: Predefined vs. user defined functions, using predefined functions, standard mathematical functions, time functions, and random numbers.	Python Practical ProgrammingCh3
28	6	User defined functions: Function Basics, Using Functions, Main Function, Parameter Passing.	Python Practical ProgrammingCh4
29	6	User defined functions: Global Variables, Default Parameters, and Making Functions Reusable.	Python Practical ProgrammingCh4
30	6	Fruitful functions; Return values, Incremental development, Boolean functions.	Python Practical Programming Ch6
		Terminal Examination	

X.   Course Learning Outcomes(CLO)and Program Learning Outcomes

Upon completion of the course, students will be able to:

CLO	Description	PLO
C1	Explain the basic concepts and components of Information and Communication Technologies.	

C2	Apply appropriate problems solving techniques to solve simple computing problems using flowchart and other tools.	
C3	Explain the concepts of variables, conditional and repetitive structures, and functions in python.	
C4	Develop a project in a team environment.	

Program Learning Outcomes (PLOs)

PLO	Description
a-1	Use knowledge of computing to solve problems
c-2	Implement a computer-based system, process, component, or program to meet desired needs
i-1	Ability to use current techniques or skills necessary for computing practice

XI.   Assessment Schedule - Tentative

Give your tentative assessment plan with submission due date.

S. No.	Artifact	Due Date	Remarks
1	Assignment 1	Before Mid	
2	Assignment 2	Before Mid	
3	Mid Exam		
4	Assignment 3	Before Final	
5	Assignment 4	Before Final Exam	
6	Terminal Examination		

The course teacher may add quizzes, project or more assignment as he/she may deemed fit

XII.   Policy & Procedures

- **Attendance Policy:** Every student must attend 80% of the lectures delivered in this course and 80% of the practical/laboratory work prescribed for the respective courses. The students falling short of required percentage of attendance of lectures/seminars/practical/laboratory work, etc., shall not be allowed to appear in the terminal examination of this course and shall be treated as having failed this course.

- **Grading Policy:** The minimum pass marks for each course shall be 50%. Students obtaining less than 50% marks in any course shall be deemed to have failed in that course. The correspondence between letter grades, credit points, and percentage marks at CUI shall be as follows:

Grade	A	A-	B+	B	B-	C+	C	C-	D	F
Marks	90 - 100	85 - 89	80 - 84	75 - 79	70 - 74	65 - 69	60 - 64	55 - 59	50 - 54	<50
Cr. Point	4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.7	1.3	0.0

- **Missing Exam:** No makeup exam will be given for final exam under any circumstance. When a student misses Sessional 1 or Sessional 2 for a legitimate reason (such as medical emergencies), his grade for this exam will be determined based on the Department policy. Further, the student must provide an official excuse within one week of the missed exam.

- **Academic Integrity:** All CUI policies regarding ethics apply to this course. The students

are advised to discuss their grievances/problems with their counsellors or course instructor in a respectful manner.

- **Plagiarism Policy:** Plagiarism, copying and other anti-intellectual behavior are prohibited by the university regulations. Violators may have to face serious consequences.